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DISEASES CAUSED BY BACTERIA AND FUNGI

HOOD, A. M. (1953). **Phage typing of** *Staphylococcus aureus*.—*J. Hyg., Camb.* **51,** 1-15. 3257

In order to reduce the number of manipulations in the phage typing of streptococci, H. used 5 pooled phages for initial screening tests, followed by testing of each phage of the pool in which lysis occurred. The results resembled those obtained when phages were incubated separately with the same staphylococcal strains. No interference by resistant phages was encountered.—A. H. LINTON.

JOHANNSEN, A. (1950). Förekomst och utbredning av streptokockmastiter i Göteborgs mjölktillförselområde. [**Occurrence and spread of streptococcal mastitis in the district supplying milk to Gothenburg.**]—*Nord. Vet.-Med.* **2,** Suppl. pp. 37-43. [In Swedish.] 3258

Examination of 3,554 cows on 333 farms in connexion with milk inspection revealed that about 65% of the farms, 19% of the cows and 8% of the udder quarters examined were infected with streptococcal mastitis.

—R. B. HOLCOMBE.

MURPHY, J. M. & STUART, O. M. (1953). **The effect of introducing small numbers of** *Streptococcus agalactiae* **(Cornell 48 Strain) directly into the bovine teat cavity.**—*Cornell Vet.* **43,** 290-310. 3259

Artificial inoculation of small numbers of *Str. agalactiae* into the teat cavity of four first-calf heifers produced acute mastitis in 9 of 11 quarters. Quarters which previously had become naturally infected with other organisms did not develop infection with *Str. agalactiae*.

—L. M. JONES.

ELLIKER, P. R. (1953). **Quaternaries and hypochlorites in mastitis sanitation.**—*J. Milk. Tech.* **16,** 22-25. 3260

E. considered quaternaries and hypochlorites to be about equally effective against *Streptococcus agalactiae,* but recommended quaternaries as being less irritant to the skin.

—E. A. GIBSON.

GLASER, R. J., BERRY, J. W. & LOEB, L. H. (1953). **Production of group A streptococcal cervical lymphadenitis in mice.**—*Proc. Soc. exp. Biol., N.Y.* **82,** 87-92. 3261

An account of the artificial infection of mice with Group A streptococci by the nasal route: the lymphadenitis resulting from such infection bears a significant resemblance in its histological pattern to that produced by pneumococci, particularly by type III strains.—A.S.

STEIN, C. D. (1953). **Anthrax in livestock in the United States and its control.**—*Proc. 56th Ann. Meet. U.S. live Stk sanit. Ass.* pp. 67-86. 3262

A review of the incidence, nature and control of anthrax of livestock. In the U.S.A. the control of this disease problem is carried out by State sanitary officials rather than by the Federal Bureau of Animal Industry.

—L. M. JONES.

RICHTER, J., VAN DORSSEN, C. A. & DONKERVOET, J. (1953). Phtisis bulbi door infectie met Mycobacterium avium bij een postduif. [**Infection of the eye in a pigeon, caused by avian type tubercle bacilli.**] — *Tijdschr. Diergeneesk.* **78,** 154-160. [English, French and German summaries.] 3263

An account of avian type *M. tuberculosis* infection of the eye in a racing pigeon, together with a discussion of the literature from 1884 onwards.—C. A. VAN DORSSEN.

SCHÜRMANN, R. (1952). Zur Histogenese des Tuberkels in der Chorio-Allantois-Membran des Hühnerembryos. [**Histogenesis of TB. on the chorioallantoic membrane of the chick embryo.**]—*Virchows Arch.* **321,** 395-410. 3264

The mesenchymal reticulum of the chorio-

allantoic membrane of the developing chick embryo, inoculated with human and bovine type tubercle bacilli, shows an early non-specific exudative phase, which may lead to necrobiotic processes, analogous to caseation. A productive phase begins at an early stage. The reticulum cells are differentiated into pre-epithelioid cells, and, under the influence of strong irritation, into giant cells. The extent of the changes is directly proportional to the quantity of tubercle bacilli introduced. Spread of the tuberculous process from the chorio-allantoic membrane to the embryo *via* the amniotic fluid was observed once. The chorio-allantoic membrane possesses in its reticular mesenchyme a tissue which is morphologically undifferentiated, easy to examine, and highly reactive, and it is well suited to the study of pathological-anatomical problems.—W. R. Bett.

Vizy, L. (1952). Ujabb antigénkivonat alkalmazása a gümökór komplementkötési próbájában. [**An antigen for the complement-fixation test for TB.**]—*Mag. állatorv. Lapja.* **7**, 131-132. [English and Russian summaries.] 3265

An antigen prepared by extracting completely dry tubercle bacilli with boiling propyl alcohol proved satisfactory in complement-fixation tests.—K. G. Towers.

Prina, C. (1953). Attivitá enzimatiche, antibiotici e bacillo tubercolare. I. Attività lipasica del tessuto polmonare nell'infezione tubercolare. II. Azione della lipasi pancreatica e della streptomicina sul bacillo di Koch, sulla tributirrina e su alcuni tweens. [**Effect of enzymes and antibiotics on** *M. tuberculosis.*]—*Bol. Ist. sieroter., Milano.* **32**, 40-44; 124-129. [Abst. from English summaries.] 3266

I. The lipase activity of lung tissue taken from g. pigs infected with *M. tuberculosis* by the intratracheal route increased during the first five days after infection. There was no increase in lipase activity following the intratracheal inoculation of heat-killed organisms or of sterile flour paste. As tuberculous involvement of the lungs progressed, the lipase activity decreased. P. considered the lipolytic response of lung tissue to *M. tuberculosis* to be the manifestation of a specific defence mechanism.

II. Using an acidimetric method, P. demonstrated lipolytic action of streptomycin on *M. tuberculosis in vitro.* Neither iso-nicotinic acid hydrazide nor penicillin showed evidence of lipolysis. Streptomycin produced changes in the morphology and staining properties of the organism similar to those produced by pancreatic lipase.—R.M.

Dubos, R. J., Pierce, C. H. & Schaefer, W. B. (1953). **Immunity to tuberculosis.**—*Mich. St. Coll. Vet.* **13**, 206-214. 3267

The effectiveness of vaccination with living or killed tubercle bacilli in producing tuberculous immunity in man and animals was discussed. Immunity produced by primary infection or by vaccination cannot prevent or eradicate re-infection, but will inhibit or retard the multiplication of the re-infecting bacilli as long as the vaccinating bacilli persist in the body, this depending on their virulence.

—A. Ackroyd.

I. Dubos, R. J., Pierce, C. H. & Schaefer, W. B. (1953). **Antituberculous immunity induced in mice by vaccination with living cultures of attenuated tubercle bacilli.**—*J. exp. Med.* **97**, 207-220. 3268

II. Dubos, R. J., Schaefer, W. B. & Pierce, C. H. (1953). **Antituberculous immunity in mice vaccinated with killed tubercle bacilli.** —*Ibid.* 221-233. 3269

III. Dubos, R. J. (1953). **Effect of the composition of the gaseous and aqueous environments on the survival of tubercle bacilli** *in vitro.*—*Ibid.* 357-366. 3270

I. Mice vaccinated either i/p or i/v with an attenuated culture were challenged subsequently with a virulent culture of tubercle bacilli. The immunity induced was in no case sufficient to protect vaccinated animals against death from virulent infection. It did prolong their life, however. The numbers of virulent bacilli that could be recovered from the spleen of vaccinated animals after infection were 10 times smaller than those found in the control mice. The immunity induced depended on the extent to which the bacilli used for vaccination multiplied *in vivo.*

II. Killed suspensions of six strains of tubercle bacilli were used. Mice vaccinated with 1·0 or 0·2 mg. of phenol-killed cultures prepared from any of the strains used, survived challenge with virulent culture longer than controls or those vaccinated with 0·4 mg. killed culture. All the vaccines used were approx. equally effective irrespective of the virulence of the strains from which they had been prepared. In no case, however, was the immune mechanism able to bring about complete destruction of the virulent bacilli in the tissues. The antigen involved was susceptible to heat and protective activity could be demonstrated after the bacterial cells had disintegrated and were rendered non-acid-fast by extracting with concentrated phenol.

III. Cultures of tubercle bacilli maintained in a gaseous environment created by germinat-

ing oats (to utilize the available oxygen), were sterilized within three weeks. At the end of this period microscopic examination of the anaerobic cultures revealed extensive autolysis of the bacterial cells and loss of ability to take the acid-fast staining. Increased CO_2 tension and the presence of sodium lastate hasten the death rate under these conditions. The possible significance of these findings in relation to the pathogenisis of TB. was discussed.—D. LUKE.

BIRKHAUG, K. (1953). **Synergistic effects of BCG vaccine and hyaluronidase in guinea pigs.**—*Amer. Rev. Tuberc.* **68,** 188-198. [French and Spanish summaries. Author's summary copied *verbatim.*] 3271

Hyaluronidase accelerates and intensifies the degree of local and general dispersion of BCG vaccine, the production of vaccination skin lesions and tuberculin sensitivity, and occasionally induces generalized tuberculous infection without an accompanying enhancement of the virulence of the vaccine. Hyaluronidase stimulates BCG vaccine to produce a slightly higher degree of specific resistance to tuberculous infection than is produced by BCG vaccine alone. The synergistic action of hyaluronidase and BCG vaccine produces protracted ulcerative skin lesions, lymphoglandular hyperplasia, and occasional generalized tuberculous infection in guinea pigs; hence, the combination should not be used in man.

MORSE, W. C., DAIL, M. C. & OLITZKY, I. (1953). **A study of the neutral red reaction for determining the virulence of mycobacteria.**—*Amer. J. publ. Hlth.* **43,** 36-39. 3272

The neutral red cytochemical reaction measured the virulence of 180 clinically isolated acid-fast organisms as satisfactorily as the conventional inoculation of g. pigs or, in the case of avian strains, fowls.—A. ACKROYD.

CAVRINI, C. & GENTILE, G. (1953). Sul granuloma di Roeckl. Osservazioni cliniche e richerche sperimentali. [**Roeckl's granuloma in cattle.**]—*Arch. Vet. Ital.* **4,** 207-223. [English, French, German and Spanish summaries.] 3273

A detailed description of Roeckl's granuloma in a bullock, which was cured by treatment with isonicotinic acid hydrazide. A healthy calf injected with material from nodular lesions in the caudal muscles of the affected animal remained in good health. The authors considered that predisposing factors must be of importance in the aetiology of Roeckl's granuloma.—A.S.

PRIGGE, R. (1950). Die Wertbemessung des Schweinerotlauf-Serums. [**The evaluation of swine erysipelas serum.**]—*Schweiz. Z. Path. Bakt.* **13,** 20-41. [English, French and Italian summaries.] 3274

A detailed discussion of the technique and interpretation of tests for the evaluation of *Erysipelothrix rhusiopathiae* antiserum, with special reference to the methods of Lorenz, Voges & Schütz, and Marx. Various modifications were considered, three of them being tested, and found to give satisfactory reproducible results. —J. EDWARDS.

ELLIS, E. M. & BARNER, R. D. (1953). **Hemagglutination (indirect) with** *Erysipelothrix rhusiopathiae.*—*Mich. St. Coll. Vet.* **13,** 170-171. [Abst. from authors' summary.] 3275

The authors demonstrated a haemagglutination reaction in which antigen of *E. rhusiopathiae* was adsorbed on sheep r.b.c. with subsequent agglutination by a specific antiserum.

CLAPP, K. H. (1953). **Circling disease in South Australia.**—*Aust. vet. J.* **29,** 82. 3276

Circling disease had not been previously reported in Australia. C. reported its occurrence in three flocks of sheep. Two strains of *Erysipelothrix* (*Listeria*) *monocytogenes* isolated from the brains of affected sheep differed antigenically from strains from the U.S.A. and the United Kingdom.—K. G. JOHNSTON.

WEIDENMÜLLER, H. (1953). Zur Kasuistik der infektiösen Bronchopneumonie des Rindes (sogenannte Wild- und Rinderseuche.) [**Pasteurella broncho-pneumonia of cattle.**]—*Tierärztl. Umsch.* **8,** 161-162. 3277

An account of an outbreak of pasteurella broncho-pneumonia in cattle. W. pointed out that, according to German law haemorrhagic septicaemia (Wild- und Rinderseuche) has to be treated as a contagious disease, with vigorous control measures, whereas the outbreak described was of a sporadic nature. —R.M.

JIŘINA, K. (1953). Pasteurellosis bei Ziegen. [*Pasteurella* **infection in goats.**] — *Mh. VetMed.* **8,** 271-272. 3278

Pasteurella infection, characterized by pneumonia, broke out while a collection of 2,500 goats that were imported from Switzerland to Austria were in quarantine. An autogenous vaccine failed to control the outbreak. Five hundred goats died, and the survivors were slaughtered.—R.M.

EIELAND, E. & ROLFSJORD, L. (1950). Pseudomonas aeruginosa som årsak til mastitis hos storfe. [*Pseudomonas pyocyanea* **causing**

mastitis in cattle.]—*Nord. Vet-Med.* 2, Suppl. pp. 32-36. [In Norwegian.] 3279

Report of an examination of an outbreak of mastitis in a herd of 20 cows, 3 yielding pure culture of *Ps. pyocyanea* from one quarter.
—R. B. HOLCOMBE.

NEWBERNE, P. M. (1953). **An outbreak of bacterial gastro-enteritis in the South American chinchilla.**—*N. Amer. Vet.* 34, 187-188 & 191. 3280

N. described *Pseudomonas pyocyanea* infection in chinchillas reared in captivity. *Giardia* infestation appeared to be a predisposing cause.—E. A. GIBSON.

DEMEREC, M. & CAHN, E. (1953). **Studies of mutability in nutritionally deficient strains of *Escherichia coli*. I. Genetic analysis of five auxotrophic strains.** — *J. Bact.* 65, 27-36. 3281

The effect of mutagens on the rate of reverse mutations was found to differ in each of the nutritionally deficient strains of *Bacterium coli* studied. The pattern of the delayed appearance of induced mutants was a characteristic of the genetic locus under investigation rather than of the bacterial strain or the mutagen used in treatment.—L. M. JONES.

STENDERUP, A., (1953). **Studies on the action of streptomycin on E. coli. The effect of the pH of the medium and of the concentration of streptomycin on its antibacterial action. Development of streptomycin resistance.**—*Acta path. microbiol. scand.* 32, 453-464. [In English.] 3282

The *in vitro* action of streptomycin on *Bact. coli* is highly dependent upon the pH of the medium. Bacteria which survived effective exposures to non-lethal concentrations of the antibiotic acquired a degree of resistance related to the concentration of the antibiotic to which they were exposed. This was said to suggest that the antibiotic plays an active part in the development of resistance, apart from the spontaneous emergence of resistant strains.
—G. P. MARSHALL.

ABELSETH, M. K. & ROBERTSON, H. E. (1953). ***Salmonella typhi-murium* infection in 1952 turkey flocks—a public health hazard.**—*Canad. J. publ. Hlth.* 44, 263-265. 3283

There is an apparent increase in mortality of turkey flocks due to *S. typhi-murium*. The authors reported several human cases that resulted from the handling of infected birds.

I. GWATKIN, R. & DZENIS, L. (1953). **Studies in pullorum disease. XXXI. A possible method of examining chick down for the presence of *Salmonella pullorum*.**—*Canad. J. comp. Med.* 17, 232-237. 3284

II. GWATKIN, R. & DZENIS, L. (1953). **Studies in pullorum disease. XXXII. Infection of adult turkeys with single and multiple oral doses of mixed forms of *Salmonella pullorum*.**—*Ibid.* 251-254. 3285

I. Dry chick down, sent to the laboratory, was not satisfactory for examination for *S. pullorum*. The organisms can, however, be isolated when the down is shipped in broth and plated on arrival.

II. Ten divided oral doses of *S. pullorum* stimulated more agglutinin and the reaction persisted longer than when the whole dose was given at one time.—P. J. G. PLUMMER.

BROCHART, M. & PARAF, A. (1953). Contribution à l'étude de la brucellose chez le taureau. Résultats de son dépistage systématique dans les centres d'insémination artificielle. [***Brucella abortus* infection in bulls used for artificial insemination.**]—*Rec. Méd. vét.* 129, 302-316. 3286

Stud bulls infected with *Br. abortus* commonly have rather low agglutinin titres, except in the acute stage of the disease. The rapid agglutination test is superior to the slow, but non-specific reactions may be found with either. The only proof of genital infection is the recovery of organisms from the semen, but this is not always easy. A combination of high agglutinin titre and genital troubles such as low fertility rate, lack of libido etc., provides presumptive evidence of genital infection.—I. W. JENNINGS.

HESS, E. & SACKMANN, W. (1953). Die bakteriologische Milchüberwachung als Grundlage der Bangbekämpfung. [**Bacteriological examination of milk in the control of brucellosis.**]—*Schweiz. Arch. Tierheilk.* 95, 367-374. [English, French and Italian summaries.] 3287

The authors found in a survey in the Canton of Zurich that 13% of herds and 6% of all cattle were infected with brucellosis and that cows excreting *Br. abortus* in their milk were present in about half of the infected herds. They described techniques for examining bulked milk samples by the ring test and quarter samples by the agglutination test and culture.—R.M.

ROSSI, P. & DUTILLOY, Y. (1952). L'indice bactériotropique dans la brucellose bovine. [**Bacteriotropins in bovine brucellosis.**]—*Bull. Soc. Sci. vét., Lyon.* 53, 50-52. 3288

A description of a test to demonstrate the presence of brucella bacteriotropins in sera prepared from bovine blood and milk. The

authors compared this test with a standard agglutination test using sera from healthy and infected animals, and from healthy animals immunized with Strain 19 vaccine. The results agreed closely. Vaccination with Strain 19 activated the bacteriotropins.—G. V. LAUGIER.

I. MANTHEI, C. A., MINGLE, C. K. & CARTER, R. W. (1953). **Comparison of immunity and agglutinin response in cattle vaccinated with *Brucella abortus* Strain 19 by the intradermal and subcutaneous methods.**—*Proc. 56th Ann. Meet. U.S. live Stk sanit. Ass.* pp. 100-114. 3289

II. MANTHEI, C. A. (1953). **Evaluation of vaccinal methods and doses of *Brucella abortus* Strain 19.**—*Ibid.* pp. 115-125. 3290

I. These data show there is no difference in the immunity and agglutinin response in cattle inoculated as yearlings with 5 ml. of Strain 19 vaccine s/c or 0·2 ml. of the same vaccine i/d. The agglutinin titres following vaccination were above the diagnostic level of infection in a high percentage of the animals. A majority of the vaccinated heifers was not resistant to the excessive conjunctival exposure dose of virulent brucella administered during the first pregnancy.

II. The conclusion reached from this review of data concerning methods of vaccination and dosage was that further research is needed before recommendations can be made regarding the minimum dose of Strain 19 vaccine or the most effective method of vaccination.—L. M. JONES.

SCHLINGMAN, A. S. & MANNING, M. C. (1952). **Further observations on inactivated *Brucella abortus* as an immunizing agent in cattle.**—*N. Amer. Vet.* 33, 397-405. 3291

A vaccine consisting of virulent culture sterilized by ultra-violet light and precipitated by alum was given to 28 cattle. Its efficacy was tested by exposure of the animals to both homologous and heterologous strains of *Br. abortus*. Serological and bacteriological data were recorded and the vaccine was considered to have conferred appreciable immunity.

—K. G. TOWERS.

EDGINGTON, B. H. & KING, N. B. (1953). **A summary of results obtained in Ohio in comparative tests of Huddleson's *Brucella* mucoid and Strain 19 vaccines.**—*Proc. 56th Ann. Meet. U.S. live Stk sanit. Ass.* pp. 126-130. 3292

In these tests evidence of infection of cattle following experimental exposure to a virulent strain of *Br. abortus* was the recovery of organisms at parturition. Twenty of 22 Strain 19 vaccinates, 12 of 23 "M" vaccinates, and 4 of 23 non-vaccinates were resistant to experimental exposure. While neither vaccine gave complete protection in these experiments Strain 19 vaccine gave greater protection than "M" vaccine.—L. M. JONES.

BUDDLE, M. B. & BOYES, B. W. (1953). **A *Brucella* mutant causing genital disease of sheep in New Zealand.**—*Aust. vet. J.* 29, 145-153. 3293

An organism, which is considered to be a member of the *Brucella* group, was recovered from the semen and from lesions in the genital organs of 45 rams from various districts in New Zealand. An identical organism was recovered from diseased foetal membranes, aborted foetal lambs and from the colostrum of naturally infected ewes. The inoculation of suspensions of this organism by the intravenous, intratesticular or intrapreputial routes reproduced lesions similar to the natural infection and the organisms were excreted in the semen. Pregnant ewes, inoculated intravenously, had grossly diseased membranes with or without dead lambs. The morphological, cultural and biochemical properties of the organism were described. It is considered that the properties of the organism are such that it could be a variety of *Br. melitensis* adapted to the New Zealand environment.

—D. F. STEWART.

BUNNELL, D. E., BAY, W. W. & HUTCHINGS, L. M. (1953). **Studies on the vaccination of swine against brucellosis.**—*Amer. J. vet. Res.* 14, 164-171. 3294

Store pigs were vaccinated with ether and phenol extracts of *Brucella suis* and with a mucoid "brucella M" vaccine. Blood agglutinins were produced, but no protection against experimental *Br. suis* infection could be shown.

—E. A. GIBSON.

SANDERS, E. & WARNER, J. (1953). **Urease and catalase activities of *Brucella melitensis* from different geographical regions.**—*Amer. J. vet. Res.* 14, 388-391. [Authors' summary modified.] 3295

The activities of urease and catalase in cells of smooth-intermediate colonial types of 84 strains of *Br. melitensis* were determined and compared. The strains showed wide differences in both urease and catalase activities. The high or low activities of each of the enzymes was characteristic of strains from certain limited geographical regions: (1) central and eastern States of the U.S.A.—urease, 2·6; catalase, 47·2; (2) France (8 of 10 strains examined) urease, 3·9; catalase, 7·5; (3) Mediterranean Islands,

North Africa, Mexico, and southwestern States of the U.S.A.—urease, 0·2; catalase, 10·9. Strains of *Br. melitensis* with high activities of both urease and catalase, were isolated only in the central and eastern sections of the U.S.A. where infections by *Br. melitensis* had not been detected until recent years.

WELLINGTON, N. A. M., FERRIS, A. A. & STEVENSON, W. J. (1953). **Leptospirosis amongst farm animals in a dairying district.** *Aust. vet. J.* **29,** 212-216. [Authors' summary copied *verbatim.*] **3296**

L. pomona and *L. mitis* are both responsible for infections amongst cows, calves, horses, and swine in Gippsland, Victoria. Overt clinical manifestations of the disease are almost limited to calves and cows. The bovine disease is sporadic and often severe, with an appreciable mortality in calves. Swine are important as carrier animals and horses may also fit into this category.

OAKLEY, C. L. & WARRACK, G. H. (1953). **Routine typing of** *Clostridium welchii.*—*J. Hyg., Camb.* **51,** 102-107. **3297**

While examining some 500 different strains of *Cl. welchii* for toxigenicity in epidemics of food poisoning, the authors devised the following sequence of routine tests which they described in detail: toxin production; examination for haemolysins and for substances affecting egg-yolk emulsions; examination for collagenases and for substances attacking azocoll; examination for hyaluronidase; examination for desoxyribonuclease; examination for necrotizing and lethal toxins; intravenous tests for lethal toxins (seldom found necessary). The methods are simple, rapid, economical, and reliable.

—W. R. BETT.

I. BOWEN, H. E. (1952). **The partial purification of the lethal toxin of** *Clostridium histolyticum.*—*Yale. J. Biol. Med.* **25,** 124-130. **3298**

II. BOWEN, H. E. (1952). **A comparison of the lethal and hemolytic toxins of** *Clostridium histolyticum.*—*Ibid.* **25,** 131-138. **3299**

I. Of several methods of concentrating the toxin of a strain of *Cl. histolyticum,* fractionation with ethanol in the cold gave the purest toxin and the highest yield. Each mg. of toxin contained 85 m.l.d. per kg. mouse. This value was intermediate between that of purified *Cl. welchii* α toxin and diphtheria toxin.

II. The properties of the lethal toxin and haemolysin of this strain of *Cl. histolyticum* were studied. The haemolysin is unstable, whereas the lethal toxin resists oxidation and surface denaturation. The former can be selectively absorbed, and it is suggested that the two toxins are not identical, although both are probably proteins or protein complexes.

—E. G. WHITE.

DOLMAN, C. E. (1953). **Human botulism in Canada.**—*Canad. med. Ass. J.* **68,** 538-543. **3300**

An account of botulism in human beings in Canada, due to type E toxin, resulting from eating pickled trout.

DOLMAN, C. E. & CHANG, H. (1953). **The epidemiology and pathogenesis of Type E and fish-borne botulism.**—*Canad. J. publ. Hlth.* **44,** 231-243. [Authors' summary copied *verbatim.*] **3301**

Since 1934 there have been 10 known episodes of proven type E botulism involving 41 persons of whom 13 died. Seven occurrences were in North America, including 3 in British Columbia, 2 in New York State, one in California and one in Alaska. One case was reported from Russia in 1940, and a 14-person outbreak from northern Japan in 1951. An outbreak in Denmark, also in 1951, has just come to light.

Some form of fish, or marine mammal, was implicated in all but one of these outbreaks. *Cl. botulinum* type E has been isolated also from the intestinal contents of sturgeon in the Soviet Union, and of a river perch in France. In Russia where fish-borne botulism has been prevalent for more than 100 years, both exogenous and endogenous modes of infection of fish with *Cl. botulinum* type A or B have been demonstrated. The intestinal tract of large sturgeon-type fish is particularly prone to harbour such organisms. A similar pathogenesis probably obtains in type E botulism.

Although fish-borne botulism is by no means invariably of type E origin, fish have undoubtedly served as the customary vehicles of type E botulism. This association seems mainly due to the slight heat resistance of type E spores, which tends to prevent their survival in even moderately heated foodstuffs. Other possible contributory factors are that type E toxin is likewise markedly heat-labile, and is produced at unusually low temperature and pH ranges. Also, fish protein may be particularly conducive to toxin production by type E strains.

MERKT, H. & GARNICA, C. S. (1952). Über die Behandlung der Vibriosis genitalis beim Rinde. **[Treatment of** *V. fetus* **infection in cattle.]**—*Fortpfl. Bes. Haustiere.* **2,** 33-35. Published in *Dtsch. tierärztl. Wschr.* **59,** No. 19/20. (1952). **3302**

V. fetus was obtained in culture from the

preputial washings of three bulls from herds with a history of difficulty in getting heifers into calf at the first service. Three daily preputial injections of streptomycin-penicillin (1 million units each) effected a cure, as judged by negative cultures in the next three weeks and satisfactory service rates on return to the herd, although no precise records were obtained.—E. G. WHITE.

BROWN, C., JR., PROPP, S., GUEST, C. M., BEEBE, R. T. & EARLY, L. (1953). **Fatal fungus infections complicating antibiotic therapy.**—*J. Amer. med. Ass.* **152,** 206-207. [Authors' summary copied *verbatim.*] 3303

Presented are three cases of fatal fungus infections associated with antibiotic therapy. The evidence from these and other cases suggests that patients who are receiving broad spectrum antibiotics should be carefully observed for evidence of fungus invasion.

KLIGMAN, A. M. (1952). **Are fungus infections increasing as a result of antibiotic therapy?** — *J. Amer. med. Ass.* **149,** 979-983. [Author's summary modified.] 3304

Candida albicans regularly emerges in abundance in the mouth and gastro-intestinal tract in patients receiving wide-spectrum antibiotics. K. considered that the isolation of this organism in the presence of some untoward side-reaction, such as glossitis or stomatitis, is not tantamount to a diagnosis of moniliasis. The wide-spectrum antibiotics were not found to enhance the growth of *C. albicans in vitro* nor to potentiate mycotic disease in animals with experimental moniliasis, blastomycosis, *H. capsulatum* infection, coccidioidomycosis, or sporotrichosis. He discussed the problem of superinfection with fungi in relation to the general problem of microbial resistance to antibiotics.

SEIBOLD, H. R., ROBERTS, C. S. & JORDAN, E. M. (1953). **Cryptococcosis in a dog,**—*J. Amer. vet. med. Ass.* **122,** 213-215. 3305

Anorexia and incoordination in a 4-year-old dog from Columbus, Georgia, was attributed on clinical grounds to otitis media. P.M. histopathological examination of the cerebellum and medulla revealed extensive infection by a capsulated yeast which, even in the absence of cultures could be identified with considerable certainty as *Cryptococcus neoformans*. This would appear to be the first record of cryptococcosis in the dog.—G. C. AINSWORTH.

CRUICKSHANK, R. (1953). **The epidemiology of some skin infections.** [Ringworm in man from animals.]—*Brit. med. J.* Jan. 10th, 55-59. 3306

C. discussed the source and mode of spread of various skin diseases in man. Of 2,473 ringworm infections, over 75% were due to *Microsporum audouini* (2 types), a strictly human parasite and *M. canis* (3 types). Epidemics of scalp ringworm are usually due to *M. audouini*, but in the widely distributed areas where *M. canis* is endemic, in 70–80% of cases this fungus is spread from child to child. *Trichophyton discoides* (cattle) and *T. equinum* usually cause skin infections in man.—A. ACKROYD.

HAZEN, E. L., LITTLE, G. N. & RESNICK, H. (1952). **The hamster as a vehicle for the demonstration of pathogenicity of *Actinomyces bovis*.**— *J. Lab. clin. Med.* **40,** 914-918. 3307

Experimental infection of laboratory animals with *Actinomyces bovis* is notoriously difficult. The authors reported results confirming the earlier claims by Hazen *et al.* that the young male hamster is the animal of choice for the study of the pathogenicity of *A. bovis*. All of 8 strains of *A. bovis* isolated from man [*A. israeli*?] proved to be pathogenic for the hamster; of 28 male hamsters, 3–4 weeks old, given a single i/p injection 21 developed reactions resembling those of clinical actinomycosis.

—G. C. AINSWORTH.

CAMPBELL, A. D. & TURNER, A. W. (1953). **Studies on contagious pleuropneumonia of cattle. IV. An improved complement-fixation test.**—*Aust. vet. J.* **29,** 154-163. 3308

The authors described an improved version of the complement-fixation test for bovine contagious pleuro-pneumonia. The antigen is prepared from the causal organism harvested from artificial cultures. Details of its preparation and of the test itself were given. The results obtained in acute, chronic and sub-clinical cases were set out in detail. In some "no-visible-lesion" reactors infection was found only in the pulmonary lymph nodes. Serological reactions subsequent to intracaudal vaccination were also described.—D. F. STEWART.

BAUMGARTNER, H. (1953). Die Bedeutung der Riesenzellen im Milchsediment für den Nachweis der Eutertuberkulose und der durch Brucella abortus verursachten Euterentzündung, zugleich ein Beitrag zur Kenntnis des klinischen Bildes der Bangmastitis. **[Significance of giant cells in milk sediment in the diagnosis of mastitis due to *M. tuberculosis* and *Br. abortus*.]**—*Schweiz. Arch. Tierheilk.* **95,** 327-357. [English, French and Italian summaries.] 3309

B. examined about 11,000 milk samples taken from diseased udders and found giant cells

in 3% of them. Ten per cent of the samples which contained giant cells were not infected with TB. or brucellosis. B.'s findings mostly confirmed those of previous authors. The clinical picture and course of 25 cases of mastitis caused by *Br. abortus* were described.—R.M.

MURA, D. (1953). Interferenze immunitarie in infezione mista da *Br. melitensis* e *Salmonella abortus ovis* in capre. [**Immunity in mixed infections with** *Br. melitensis* **and** *Salmonella abortus-ovis* **in goats.**]—*G. Batt. Immun.* **45,** 115-126. [English, French and German summaries.] 3310

During investigations on herds of goats with a high abortion rate it was found that the sera agglutinated both *Br. melitensis* and *S. abortus-ovis* antigens. Agglutinin absorption tests showed the infecting organism to be *S. abortus-ovis*. M. suggested that in mixed infections with these two organisms, there is mutual interference with immunity, resulting in a high abortion rate from the *S. abortus-ovis* infection and a very weak immunity to *Br. melitensis* infection.

—I. W. JENNINGS.

PILLAI, S. C., GORBAXANI, M. I. & MENON, K. P. (1952). **Influence of activated sludge on certain pathogenic bacteria.**—*Indian med. Gaz.* **87,** 117-119. 3311

A note on the effect of activated sludge on pathogenic organisms.—K. C. SINHA.

See also absts. **3512** (micromethods for bacteriology); **3513** (reductase test); **3514** (supravital staining for testing viability of bacteria); **3517** (report, London School of Hygiene & Tropical Medicine); **3518** (report, Ministry of Health, Gt. Britain); **3519** (report, Southern Rhodesia); **3520** (report, Grenada); **3521** (report, Bechuanaland); **3524** (report, U.S.A.).

DISEASES CAUSED BY PROTOZOAN PARASITES

FIENNES, R. N. T. W. (1953). **The therapeutic and prophylactic properties of antrycide in trypanosomiasis of cattle. A review of work done under Colonial Development and Welfare Scheme R 318, 1949 to 1952.**—*Brit. vet. J.* **109,** 280-295 & 330-344. 3312

Treatment of acute disease, as in the earlier trials, by the use of antrycide is satisfactory. Treatment of the chronic type of disease is much more difficult. There is, moreover, good evidence that cattle treated prophylactically with antrycide and exposed to tsetse flies are not absolutely protected, but undergo a cryptic infection comparable with premunity. It is apparently not possible to transmit trypanosomiasis by subinoculation of blood and tissues from antrycide protected cattle as long as blood and lymph node smears are negative. Intercurrent infection, *e.g.* inoculation with goat-adapted rinderpest virus, may cause cryptic infections to become overt. Misuse of antrycide may induce dangerous complications, both *T. vivax* and *T. congolense* becoming drug-fast to antrycide, while *T. congolense* may at the same time develop resistance to dimidium. This drug-fastness is not, however, irreversible and can be lost after a single passage through an untreated bovine animal. The danger may not, therefore, be so great as might have been anticipated. Exaggerated claims for antrycide have not been substantiated, but the drug is at least as effective as any other against chronic trypanosomiasis.—S. BRIAN KENDALL.

PHILLIPS, B. P. (1953). **The effects of various treatment procedures on the metabolism of** *Trypanosoma cruzi* **and on its ability to support growth of** *Endamoeba histolytica.*—*Amer. J. trop. Med. Hyg.* **2,** 47-53. 3313

T. cruzi which were rendered immobile and incapable of reproduction, but which reduced methylene blue and produced acid, supported growth of *E. histolytica*.—S. F. M. DAVIES.

NAKAMURA, M. & JAMES, M. B. (1953). **Effect of purine derivatives on** *Trypanosoma cruzi in vitro.*—*Exp. Parasit.* **2,** 19-26. 3314

The authors described techniques used for determining the effect on the oxygen uptake of *T. cruzi* of one pyrimidine and nine purine derivatives under aerobic and under anaerobic conditions. 2, 6-Diamino purine hydrate appeared to be the most active of the agents studied.—S. BRIAN KENDALL.

HEWITT, R. I., WALLACE, W. S., GUMBLE, A. R., GILL, E. R. & WILLIAMS, J. H. (1953). **Experimental chemotherapy of trypanosomiasis. III. Effect of Achromycin against** *Trypanosoma equiperdum* **and** *Trypanosoma cruzi.*—*Amer. J. trop. Med. Hyg.* **2,** 254-266. 3315

T. equiperdum infections in mice and rabbits were successfully treated with single or multiple doses of "achromycin" (a product of *Streptomyces albo-niger*), parenterally or orally. Variable effects followed its use in *T. cruzi* infections in mice; it appeared inactive against tissue stages. LD_{50} values in mice were determined. Kidney damage followed repeated administrations to rats.—S. F. M. DAVIES.

PACKCHANIAN, A. & PINDAK, F. (1953). **Chemotherapy of experimental dourine. (***Trypanosoma equiperdum* **infection) in**

mice (*Mus musculus*).—*J. Parasit.* **39**, No. 4 —Sect. 2. p. 14. [Only abst. given. Abst. from abst.] 3316

Two hundred mice experimentally infected with *Trypanosoma equiperdum* were treated with 21 new nitrofuran compounds. Thirteen of the compounds were without any therapeutic effect in spite of daily treatment with the maximum tolerance dose. The trypanosomes increased rapidly in the circulating blood and all animals were found dead within 5 days. The remaining eight compounds had a definite therapeutic effect; the flagellates disappeared from the circulating blood following one to three treatments. With a few of the drugs of this group the seemingly therapeutic effects were apparently only suppressive. Four of the compounds produced an "absolute cure"; the mice were subsequently under observation for several weeks and none of them had any relapse of trypanosomes as determined by frequent blood examinations microscopically and by animal inoculation tests.

Controls experimentally infected but untreated all died from trypanosomiasis within four to five days.

TRAGER, W. (1953). **The development of *Leishmania donovani in vitro* at 37°C. Effects of the kind of serum.**—*J. exp. Med.* **97**, 177-188. 3317

Suspensions of *L. donovani* from the spleen of hamsters were incubated at 37°C. in a mixture of human r.b.c. extract and human or hamster serum. Within 2–4 days aflagellate forms of two kinds appeared—some resembled leishmania but were larger, others were like rounded leptomonads. These intermediate forms multiplied in culture. Nicotinamide prevented their development and destroyed cultures of leptomonads. Rabbit serum could not replace human or hamster serum.—E. G. WHITE.

FRANK, J. F. (1953). **A note on the experimental transmission of enterohepatitis of turkeys by arthropods.**—*Canad. J. comp. Med.* **17**, 230-231. 3318

Embryonated ova of *Heterakis gallinae* were fed to grasshoppers which were then fed to 21 turkeys; twenty developed enterohepatitis.
—THOMAS MOORE.

WHITTEN, L. K. (1953). **A preliminary field experiment on the treatment of coccidiosis in lambs.**—*N.Z. Vet. J.* **1**, 78-80. 3319

Mepacrine and sulphamethazine were used in a small-scale field trial for the control of coccidiosis in lambs. Under the conditions of the observation, no significant effect could be observed.—S. BRIAN KENDALL.

SALISBURY, R. M., MUIR, J. & STIRLING, J. (1953). **Coccidiosis as a probable cause of unthriftiness and deaths in lambs.**—*N.Z. vet. J.* **1**, 72-77. 3320

Coccidiosis is suggested as at least a contributory cause of heavy mortality amongst lambs on heavily stocked improved pasture in New Zealand. The disease responded to treatment with sulphamethazine.
—S. BRIAN KENDALL.

V. VIETINGHOFF-SCHEEL, O. F. (1950). Atebrin zur Behandlung der Kaninchenkokzidiose. Ziehl-Neelsen-Färburg von Leberkokzidien. **[Atebrin treatment for coccidiosis in rabbits. Staining of *Eimeria* in the liver.]**—*Arch. Hyg., Berl.* **133**, 59-62. [English and French summaries.] 3321

In rabbits naturally infected with coccidiosis the author demonstrated numerous *Eimeria* oocysts in the liver and faeces by means of Ziehl-Neelsen staining. The animals were cured by 14 daily doses of 0·15 g. of atebrin suspended in water and introduced forcibly into the throat. Re-infection was avoided by using cages with double floors, made in such a way that faeces were removed automatically from contact with the animals.—A.S.

THOMPSON, J. J. (1953). **Effects of sulphaquinoxaline on healthy laying birds.**—*N.Z. vet. J.* **1**, 81-82. 3322

Sulphaquinoxaline sodium at a final concentration of 0·0645% in the drinking water of fowls caused depression in egg yield. Fed in the mash, sulphaquinoxaline at a conc. of 0·05% had little adverse effect on egg production. Field observation in New Zealand has led to the recommendation that the drug should be administered in the mash rather than in the water.—S. BRIAN KENDALL.

I. SINGH, J., BASU, P. C. & RAY, A. P. (1952). **Prophylactic trials against *Plasmodium gallinaceum* in fowls.**—*Indian. J. Malar.* **6**, 123-131. 3323

II. SINGH, J., BASU, P. C. & RAY, A. P. (1952). **Prophylactic trial with lapinone [a naphthaquinone derivative] against *P. gallinaceum* in fowls.**—*Ibid.* 159-162. 3324

I. Fowls were artificially infected with *Pl. gallinaceum* by the injection of sporozoites. Quinine, mepacrine and amodiaquin did not protect fowls from infection. Chloroquinone (5 mg. per kg.) suppressed infection for at least a month. Pamaquin and primaquine were both effective, the latter two and a half times more effective than the former. Sulphadiazine (100 mg. per kg.), proguanil (7·5 mg. per kg.) and

bromoguanidine (15 mg. per kg.) afforded full protection from infection. Proguanil (5 mg. per kg.) combined with pamaquin (0·5 mg. per kg.) gave better results than either of these when administered separately. Pyrimethamine appeared to be effective at a dosage of 0·3 mg. per kg. All the above drugs were administered by mouth.

II. Lapinone, a naphthaquinone derivative, was administered i/m to fowls inoculated with sporozoites of *Pl. gallinaceum*. It had no action on the pre-erythrocytic forms, although a single dose of 15–30 mg. per kg. body wt. suppressed the infection temporarily.—R.M.

MANWELL, R. D. & GLENN, S. (1953). **Further studies on the cultivation of the avian malaria parasites.**—*Amer. J. trop. Med. Hyg.* **2,** 227-233. 3325

The results of cultivating *Plasmodium cathemerium, Pl. hexamerium* and *Pl. relictum* on the Harvard medium show the medium to be best adapted to *Pl. hexamerium*.

—S. F. M. DAVIES.

WHITFIELD, P. R. (1953). **Studies on the nucleic acids of the malaria parasite,** *Plasmodium berghei* **(Vincke & Lips).**—*Aust. J. biol. Sci.* **6,** 234-243. [Author's summary modified.] 3326

Changes in the nucleic acid content of the solid residue obtained by haemolysing the blood of mice infected with *Pl. berghei* were examined. The residue from blood in which 25% of the red blood cells were parasitized contained 20–25 times as much ribonucleic acid (RNA) and 12 times as much desoxyribosenucleic acid (DNA) as the residue from uninfected blood.

Nucleic acid isolated from *Pl. berghei* had an absorption spectrum similar to that of yeast nucleic acid.

The purine and pyrimidine composition of RNA and DNA isolated from *Pl. berghei* was studied by means of paper chromatography. The purine/pyrimidine ratio for parasite RNA from *Pl. berghei* was 1:40, as compared with 1:35 for yeast RNA. The corresponding ratios for DNA from *Pl. berghei* and thymus DNA were 1:40 and 1:12, whereas the value for DNA isolated from mouse leucocytes was 1:17.

GARDINER, J. L., FARR, M. M. & WEHR, E. E. (1952). **The coccidiostatic action of nitrophenide on** *Eimeria tenella*.—*J. Parasit.* **38,** 517-524. [Abst. from authors' summary.] 3327

Mortality, weight gains, haemorrhage, oocyst output, and P.M. records indicated that the administration of nitrophenide from the 49th to the 96th hours after inoculation had a beneficial effect on chicks experimentally infected with *E. tenella* oocysts. The longer the period of treatment, the greater was the benefit. Delay in the appearance, or a reduction in the amount, of haemorrhage and in the oocyst output in the groups treated in this manner, and the extension of these phenomena beyond the period that is normal for untreated birds, indicated that nitrophenide exerted a coccidiostatic action. Chicks treated only from the 96th hour after inoculation were only slightly benefited. Chicks treated from the time of inoculation or before it, up to the 48th hour after inoculation, were only slightly benefited.

There was a marked reduction in sporulation of oocysts discharged by birds treated from the 97th to the 144th hour after inoculation.

Many of the second generation schizonts differed in their reaction to staining, their appearance suggesting that they might possibly have been damaged by the nitrophenide.

RIGDON, R. H., MICKS, D. W. & BRESLIN, D. (1953). **Effect of phenylhydrazine hydrochloride on** *Plasmodium lophurae* **infection in the duck.**—*Trans. R. Soc. trop. Med. Hyg.* **47,** 70-76. 3328

Infected ducks receiving phenylhydrazine had a lower degree of parasitaemia than had the controls but the reasons for the reduction were not discovered.—JAS. G. O'SULLIVAN.

VAN NIE, C. J. & SUTMÖLLER, P. (1953). Een geïmporteerd geval van babesiosis canis. [*Babesia canis* **infection in an imported dog.**] —*Tijdschr. Diergeneesk.* **78,** 514-517. [English, French, German and Spanish summaries.] 3329

Seven experimental dogs inoculated with blood from a dog recently imported from Indonesia developed atypical babesiasis with nervous symptoms but without haemoglobinuria.

—C. A. VAN DORSSEN.

FORSYTH, G., HIRST, E. L. & OXFORD, A. E. (1953). **Protozoal polysaccharides. Structure of a polysaccharide produced by** *Cycloposthium*.— *J. chem. Soc.* July 1953, 2030-2033. [Authors' summary modified.] 3330

The ciliate protozoon *Cycloposthium* found in the colon and caecum of the horse synthesizes as reserve material a polysaccharide of high molecular weight, which contains only glucose residues. Examination of this material by the methylation method and by the periodate oxidation procedure showed that its highly branched molecular structure is closely similar

to that of amylopectin. The unit chains contain on an average 23α–1:4 linked glucopyranose residues and are joined by $C(_1)$–$C(_6)$ linkages.

McDowell, S., Jr. (1953). **A morphological and taxonomic study of the caecal protozoa of the common fowl,** *Gallus gallus.*—*J. Morph.* **92,** 337-399. 3331

Caecal material from several hundred normal fowls was examined in stained smears. The following were described in detail and illustrated:—*Chilomastix gallinarum, Trichomonas gallinarum, Trichomonas eberthi, Entamoeba gallinarum, Endolimax gregariniformis.* There was no evidence of the existence of a representative of the genus *Monocercomonas* in the normal intestine of the fowl. Such forms were apparently degenerate trichomonads. Coccidia and *Histomonas* were not dealt with in this investigation. —R.M.

See also absts. **3517** (report, London School of Hygiene & Tropical Medicine); **3519** (report, Southern Rhodesia); **3520** (report, Grenada); **3521** (report, Bechuanaland); **3526** (book, protozoology).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

I. Childs, T. (1953). **Foot-and-mouth disease, Saskatchewan, Canada.**—*Proc.* 56*th Ann. Meet. U.S. live Stk sanit. Ass.* pp. 153-165. 3332

II. Wells, K. F. (1953). **Foot-and-mouth disease control and eradication measures in Canada.**—*Ibid.* pp. 166-171. 3333

I. C. gave historical data and an outline of the methods and procedure adopted in the Saskatchewan outbreak of F. & M. disease. He indicated the probable source of infection and described control measures along lines familiar in Great Britain.

II. This is a brief outline of the F. & M. disease control operations carried out in Saskatchewan. These included individual quarantine, general quarantine and a buffer zone—corresponding to infected premises restrictions, infected areas and control areas in Great Britain. A statement of the cost of the outbreak is appended.—G. V. Laugier.

Aries, L. (1953). Zur Pathologie der Maul- und Klauenseuche beim Menschen. [**Pathology of foot and mouth disease in man.**]—*Dtsch. tierärztl. Wschr.* **60,** 374-377. 3334

A discussion of F. & M. disease in man with a detailed account of the various forms which the infection may take. At the present time it seems that the infection is often incorrectly diagnosed, and the author calls for further research.—A.S.

Garcia Mata, E., Pizzi, L. & Aramburu, H. G. (1952). Algunos aspectos de investigaciones con virus aftoso murinizado. [**The passage of foot and mouth disease virus in unweaned mice and rats.**]—*Gac. vet. B. Aires.* **14,** 223-230. 3335

The authors proposed assay of F. & M. disease vaccine by measurement of the antibody titres in adult mice. The titration is carried out in mice 6–7 days old, using virus passaged in mice as the challenging dose.—I. W. Jennings.

Perdrix, J. (1953). Essais de vaccination antiaphteuse par la voie intradermique. [**Trials of intradermal vaccination against foot and mouth disease.**]—*Rec. Méd. vét.* **129,** 239-240. 3336

Shortage of vaccine was responsible for attempts at immunization by i/d vaccination in an outbreak of F. & M. disease caused by types A_5 and C. Vaccine was given in 2-ml. doses to 350 cattle in the skin of the tail. Results proved encouraging and P. advocated further work along these lines.—G. V. Laugier.

Varenne, H. & Constantin, A. (1953). La vaccination anti-aphteuse intradermique. [**Intradermal inoculation of foot and mouth disease vaccine.**]—*Rec. Méd. vét.* **129,** 287-291. 3337

Experiments on a small number of animals led the authors to conclude that although s/c vaccination is best for F. & M. disease, i/d vaccination also has its uses, *e.g.* when the quantity of vaccine available is limited or when animals are to be fattened for slaughter within 3–4 months.—I. W. Jennings.

Weyl. (1952). Die Tollwut im Lande Niedersachsen im Jahre 1951. [**Rabies in Lower Saxony during 1951.**] — *Dtsch. tierärztl. Wschr.* **59,** 148-152. 3338

An account of the spread of rabies westwards into Lower Saxony since the beginning of the second world war. In 1951 there were 163 confirmed cases in wild animals (133 of them foxes) and 51 cases in domestic animals, all except one being dogs or cats.—E. G. White.

Martin, E. R. (1953). Über das Vorkommen der paralytischen Tollwut der Rinder in Costa Rica. [**Paralytic form of rabies in cattle in Costa Rica.**]—*Dtsch. tierärztl. Wschr.* **60,** 269-270. 3339

M. observed a 6-year-old bullock which was removed from work after showing signs of weak-

ness. On the following day the animal lost appetite and developed a stumbling gait, repeatedly turning its head to look at its hindquarters. Within 4 days, it could no longer stand but remained on its side making ineffective "swimming" movements, and knocking its head against the ground. After it had been killed *in extremis* the head was removed and on examination Negri bodies were demonstrated microscopically in the brain. M. inoculated brain material into rabbits, causing an infection which he passaged through other rabbits and through mice until he had produced a stable virus strain capable of setting up paralytic rabies in mice after an incubation period of 7 days.—A.S.

ATZORI, L. (1953). Contributo clinico alla diagnosi precoce della rabbia. [**Diagnosis of rabies: an atypical case.**]—*Clin. Vet., Milano*. **76**, 22-25. **3340**

An account of an atypical case of rabies in a dog, the manifestations being psychical depression and anisocoria [inequality of the pupils] soon followed by a spastic paraplegia resembling that of tetanus.—I. MARTINI.

KONDO, S. (1951). [**Inactivated rabies vaccines.**]—*J. Jap. vet. med. Ass.* **4**, 334-337. [In Japanese.] **3341**

A phenol-inactivated rabies vaccine has been introduced in Japan to replace the attenuated fixed-virus vaccine. It was inactivated by mixing a tissue emulsion with 0·8% phenol and storing at 25° for 14–25 days. This emulsion was diluted with saline for use. [Umeno & Doi were using a phenolized vaccine in Japan in 1921.]—KOGI SAITO.

WYCKOFF, R. W. G. (1953). **Formation of the particles of influenza virus.**—*J. Immunol.* **70**, 187-196. **3342**

Electron micrographs of chorioallantoic membranes of chick embryos infected with influenza virus revealed particles of the dimensions of the particles seen in purified influenza virus suspensions, developing from and continuous with the cytoplasm of the inner layer of cells of the infected membranes and not forming within intact cells. Similar developing particles which were not inoculated virus, were seen with membranes inoculated with vaccinia and with Rous sarcoma viruses. This cytoplasmic fragmentation may be a non-specific cellular response to the developing virus infection.

—A. ACKROYD.

SUGAWA, Y. & TSUBAHARA, H. (1951). [**Histopathological studies on the differential diagnosis between Japanese B encephalitis and rabies of horse.**]—*2nd Rep. Jap. Equine Encephalitis*. 177-185. [English summary.] **3343**

Rabies virus was isolated from 4 of 137 dead horses examined. The salient point observed for the differential diagnosis in histopathological findings in the brain was the distribution of the lesions, this being shown in a table in English. The lesions were those of a neurotropic virus.—KOGI SAITO.

TABUCHI, E., HOSODA, T. & NARITA, R. (1951). [**On the relationship of ectoparasites on small migratory birds to Japanese encephalitis.**]—*2nd Rep. Jap. Equine Encephalitis*. 93-101. [English summary.] **3344**

Brain tissues of 35 migratory birds were tested for virus content with negative results, but from one of 31 ectoparasites, *Ornithocica momiyamani* on an aoji, *Emberiza spodocephala personata*, a virus was isolated and identified as Japanese encephalitis virus.—KOGI SAITO.

THORDARSON, O. T., SIGURDSSON, B. & GRÍMSSON, H. (1953). **Isolation of Coxsackie virus from patients with epidemic pleurodynia.**—*J. Amer. med. Ass.* **152**, 814-815. [Abst. from authors' summary.] **3345**

A widespread epidemic of epidemic pleurodynia occurred in human beings in Reykjavik from April to August 1951. An account was given of the main symptoms observed in the patients. Coxsackie virus was isolated from the faeces of 9 of 15 patients tested. Neutralization tests on paired serum samples from 7 patients indicated that at least 6 of them had previously undergone an infection with a similar or an identical type of virus. It was suggested that epidemic pleurodynia is caused by viruses of the Coxsackie group.

LÉPINE, P., SAUTTER, V., DELPY, J. & ARTZET, F. (1953). Technique de la déviation du complément sur plaques dans les maladies à virus. Application aux virus du groupe Coxsackie. [**A plate complement-fixation test for virus diseases. Its use with Coxsackie viruses.**]—*Ann. Inst. Pasteur*. **84**, 684-694. **3346**

A plate complement-fixation test of a simplified nature was described in detail with particular reference to Coxsackie viruses. Technical precautions were enumerated and it was postulated that this test, with modifications, would be of real value with other viruses.—G. V. LAUGIER.

BUGA, P. G. (1953). [**Treatment of equine infectious encephalomyelitis with potassium iodide.**]—*Veterinariya, Moscow*. **30**, No. 4.

p. 36. [In Russian.] 3347

Of 9 horses with equine encephalomyelitis 8 recovered after treatment with potassium iodide as follows:—horses were bled 0·5–1·5 litres according to their weight they were then injected i/v with 6–8 g. KI in 15–25 ml. water with 0·2—0·4 g. caffeine added, followed 8–10 hours later with a second injection, using half the quantity of KI. As a preventive measure on affected farms, 45 horses were given similar injections using 4–6 g. KI in 15–25 ml. water with 0·2–0·3 g. caffeine. No side reactions were observed and the incidence of infection ceased. Further tests on a larger scale were called for. —F.A.A.

ALEGREN, A. (1952). L'anémie infectieuse des chevaux en Suède. **[Equine infectious anaemia in Sweden.]**—*Bull. Off. int. Epiz.* **37**, 134-136. 3348

The author discussed the connexion between mineral deficiency and equine infectious anaemia and its so-called alimentary form. Prophylaxis is by prevention of insect bites and diagnosis by means of liver biopsy. Stamping out methods have been ineffective.—H. BOYD.

STECK, W. (1953). Studien über die infektiöse Anämie der Pferde: IX. Beitrag zur histologischen Differentialdiagnose mit besonderer Berücksichtigung der chronischen Streptokokkeninfektion. **[Equine infectious anaemia. IX. Histological differential diagnosis, with special reference to chronic streptococcal infection.]**—*Schweiz. Arch. Tierheilk.* **95**, 317-326. [English, French and Italian summaries.] 3349

The pathological findings in 89 cases of E.I.A. were compared with those in 9 cases of chronic streptococcal infections and 31 cases of other diseases in horses. A reliable diagnosis of E.I.A. could be made from the presence of large numbers of monocytes in certain parts of the lungs, liver and spleen, and pronounced haemosiderosis.—R.M.

GOOR, S. (1952). **[Infectious diseases of equines in Palestine (1921-1948). II. The 1944 epizootic of African horse sickness.]**—*Refuah vet.* **9**, 8-13. [Abst. from English summary p. 38.] 3350

Following an outbreak in Upper Egypt in Nov. 1943–April 1944, the first case in Palestine occurred at the end of Aug. 1944, although importation of horses was prohibited in early July; the spread was rapid, particularly in the coastal areas. The types were " dikkop " and " dunkop " and a mixed form, horses dying mostly within a few hours of the onset of symptoms; mules and donkeys were also affected. Onderstepoort and Kabete vaccines prevented further spread, the other important measure being the compulsory stabling of all equine animals by night. The vector was not identified.—F.A.A.

WENCKEBACH, G. K. & DE WENCKEBACH, B. W. (1950). Aislamiento de un virus en el " tembleque de los bovinos ". Comunicación previa. **[Isolation of a virus from tembleque or staggers of cattle in Argentina.]**—*Arch. argent. Pediat.* **34**, 137-143. [German summary.] 3351

" Tembleque " or staggers or " chucho " is a disease of cattle in Argentina characterised by meningoencephalitis. The authors claim to have isolated by g. pig inoculation two strains of a filtrable virus from an unstated proportion of brains of affected cattle. One strain caused encephalitis when injected into g. pigs and calves. The second strain gave rise to encephalitis in white rats but not in g. pigs. The virus was cultivated in fowl embryos. There was no cross immunity in inoculated animals to the viruses of Eastern, Western and Venezuelan encephalomyelitis, or to those of St. Louis and Japanese encephalitis. The authors conclude that while most cases of staggers in cattle are due to poisoning with Bermuda grass (*Cynodon hirsutum*), some cases are the result of a virus infection.—R.M.

EISMA, W. A. (1953). Varkenspest. **[Swine fever.]**—*Tijdschr. Diergeneesk.* **78**, 34-44. [English, French and German summaries.] 3352

A general discussion on present-day methods of immunizing against swine fever, with particular reference to the work done in the U.S.A. on the use of rabbit-adapted virus. —C. A. VAN DOORSEN.

DUNNE, H. W., SMITH, E. M., RUNNELLS, R. A., STAFSETH, H. J. & THORP, F., JR. (1952). **A study of an encephalitic strain of hog cholera virus.**—*Amer. J. vet. Res.* **13**, 277-289. [Authors' summary, conclusions and addendum modified.] 3353

An encephalitic strain of swine fever virus was isolated and maintained through 16 intracranial passages in pigs without the loss of ability to produce encephalitic symptoms or other characteristics. Encephalitic symptoms occurred just as frequently in subcutaneously inoculated swine as in intracranially inoculated ones.

This virus, designated as virus "A", produced a short incubation period, as indicated by

the increased body temperature of inoculated pigs to 105°F. or higher and by the rapid drop of total white cell counts 24 to 72 hours following inoculation of the virus.

The course of disease caused by virus A was short, with deaths occurring as early as three to five days following inoculations. In 100 animals inoculated, there were no recoveries. All animals died or were moribund when destroyed.

Incomplete protection against virus A was provided by Bureau of Animal Industry experimental serum No. 1. Commercial serum did not give complete protection in regulation serum test doses.

Thalamic lesions were evident in 100% of all cases studied. Severity of lesions appeared greatest in animals dying between the tenth and the fourteenth days. A commercial virus tested in pigs produced almost no lesions of the brain. Hydropic degeneration and proliferation of the vascular endothelium appear to be the primary pathological changes, with haemorrhages and other lesions apparently secondary or the result of these changes. No pathogenic bacteria other than *Pseudomonas pyocyanea* were isolated from the brain, blood, or intestine. This organism was isolated from 5 cases.

The recent work of Gochenour *et al.* with *Leptospira pomona* infections of swine [*V.B.* 22, 3294] suggested the possibility of the presence of that organism in the material or animals used in the serial passage of the strain of swine fever virus discussed in this paper. However, treatment of each 100 ml. of passage material with 200,000 units of crystalline penicillin G potassium and 17·5 mg. of dihydrostreptomycin sulphate failed to decrease the occurrence of convulsions. More specific evidence of the absence of the organism was found in the negative microscopic agglutination reactions to *L. pomona* of several serums from infected, immune, and normal animals used in the experiment.

Martin, L.-A., Goret, P., Hintermann, J. & Doux, G. (1952). Hépatite contagieuse du chien (maladie de Rubarth). Premier cas identifié au Maroc. **[Canine virus hepatitis in Morocco.]**—*Bull. Acad. vét. Fr.* **25**, 383-385. 3354

In this first reported case of canine virus hepatitis from Morocco, diagnosis was confirmed by histological examination (when typical inclusion bodies were shown), by animal inoculation which produced the disease, and by immunization experiments with Rubarth's strain of virus.—B. G. Clarke.

di Domizio, G. (1953). Istochimica ed istogenesi del corpo incluso del virus di Green. **[The chemistry and development of the inclusion bodies of canine virus hepatitis.]**—*Arch. Vet. Ital.* **4**, 97-104. [English, French, German and Spanish summaries.] 3355

D. concluded that the virus of fox encephalitis (canine virus hepatitis) is capable of synthesizing nucleic acids, especially thymonucleic and ribonucleic acids, of which the inclusion bodies are apparently composed.—R.M.

Momberg-Jørgensen, H. C. (1951). Hvalpesygestudier III. Fodringens indflydelse på vakcinationseffekten. **[Studies on canine distemper in mink. III. Influence of diet on effectiveness of vaccination.]** — *Nord. Vet.-Med.* **3**, 675-680. [In Danish. English and German summaries.] 3356

In the first experiment 100 similarly reared young mink were divided into 4 groups. Groups 1 and 2 were fed on a fish plus 30% meat diet, groups 3 and 6 on a fish diet. After one month on this diet groups 1 and 3 were vaccinated and again after 2 weeks. All groups were given canine distemper virus s/c after a further 2 weeks. No effect from the dietary differences was observable.

In the second experiment 100 mink reared on a fish diet were divided into 4 groups, 2 receiving a normal diet and the others a 50% fish, 50% potato diet for 2 months, followed by vaccination and challenge as in the previous experiment. No modification of immunity through diet was detectable.

The author concluded that inadequate diets did not affect the capacity of the mink to produce antibody after vaccination against distemper.—R. B. Holcombe.

Fenner, F., Marshall, I. D. & Woodroofe, G. M. (1953). **Studies in the epidemiology of infectious myxomatosis of rabbits. I. Recovery of Australian wild rabbits** (*Oryctolagus cuniculus*) **from myxomatosis under field conditions.**—*J. Hyg., Camb.* **51**, 225-244. [Abst. from authors' summary.] 3357

Australian wild rabbits which had recovered from myxomatosis acquired in the field contained, in their serum, antibodies which could be detected by complement-fixation or neutralization tests for a long period (more than 18 months) after their recovery. The titre of complement-fixing antibody fell fairly rapidly during the first few months, and remained at a steady level thereafter. No change could be detected in the titre of neutralizing antibodies throughout the observation period. Counts of the rabbit population before and after a violent epizootic in

the summer of 1951–52, and the proportion of immune animals amongst the survivors in these areas showed that the case-mortality rate was between 99·4 and 99·8%.

SÁLYI, J. & HODOSY, J. (1952). Untersuchungen über die Ätiologie und Pathohistologie der Lähmungen nach Impfung mit Hertfordshire-Vakzine. **[Paralysis following vaccination against Newcastle disease; aetiology and pathology.]**—*Acta vet. hung.* **2,** 169-199. [In German. Russian summary.] 3358

The authors described work which led them to consider that paralysis in fowls following vaccination with Hertfordshire strain Newcastle disease vaccine was due in many cases to the virus. By injection of material into chick embryos, they demonstrated the presence of the "Hertfordshire" virus in the c.n.s. of 8 out of 14 fowls killed from 6–14 days after vaccination. No virus could, however, be demonstrated in five fowls which had exhibited symptoms of paralysis for two months, which the authors took to indicate that the infection may be eradicated by natural resistance in the course of time. Similarly, lesions of encephalomyelitis, observable in the brain in the early stages of paralysis, disappeared almost entirely within 5 months.—A.S.

KASCHULA, V. R. (1952). **Newcastle disease vaccination: the use of live virus after inactivated vaccine.**—*Onderstepoort J. vet. Res.* **25,** No. 4. pp. 29-40. 3359

Investigation was made into the production of immunity against Newcastle disease, which would be durable, safe, and cause minimal loss of egg production. The optimal route of application of virus, period between vaccination and inoculation with virus, and dilution of virus were studied. K.'s work indicated that a killed virus vaccine followed after sufficient interval by ocular instillation of a non-virulent virus produced satisfactory results.—F. T. W. JORDAN.

AKÜN, R. & SCHULTE, F. (1953). Die Gewebsalkaliphosphatase in Gehirn und Milz bei der Newcastle-Disease des Huhnes. **[Alkaline phosphatase content of brain and spleen tissue in Newcastle disease.]** — *Dtsch. tierärztl. Wschr.* **60,** 77-79. 3360

In fowls that had died of Newcastle disease alkaline phosphatase was found to have diffused into the cerebral meninges and into the walls of the arterioles of the Malpighian corpuscles of the spleen.—H. BEHRENS.

I. BORYSKO, E. & BANG, F. B. (1953). **The fine structure of the chorio-allantoic membrane of the normal chick embryo. A control study for virus work.**—*Johns Hopk. Hosp. Bull.* **92,** 257-289. 3361

II. BANG, F. B. (1953). **The development of the virus of Newcastle disease in epithelial and fibroblast cells in tissue culture.**—*Ibid.* 291-307. 3362

III. BANG, F. B. (1953). **The development of Newcastle disease virus in cells of the chorio-allantoic membrane as studied by thin sections.**—*Ibid.* 309-329. [Author's summaries slightly modified.] 3363

I. An account of a study of the fine structure of the chorio-allantoic membrane of the normal chick embryo with the electron microscope. The structure apparent in living cells by osmic acid fixation for one-half to four hours was best preserved; this gave fewer demonstrable artefacts than the use of other fixtives. Continued exposure of the tissue to osmic acid caused a clearing of the cytoplasm due to an apparent removal of the more finely precipitated substance. Fixation by formalin followed by the methacrylate embedding caused distortion of red cells and destruction of the mitochondria. The separation of the chorio-allantoic membrane from the shell membrane in the living embryo was accompanied by damage to the superficial cells and ballooning distortion of some of the cell constituents. This was prevented by fixation of the chorio-allantoic membrane with osmic acid before separating it from the shell membrane.

Prominent among a variety of minute structures studied were: Microvilli—small, finger-like projections which were consistently seen on the free surface of the epithelial cells lining the allantoic cavity (these were about 0·1μ in width and varied in length from 0·1 to 1·0μ; it was estimated that one cell might have as many as 3,600 projecting from its surface): Complementary granules (dense granules lying between the cells of the allantoic layer which, in reality, consisted of symmetrical condensations on the plasma membranes of neighbouring cells): Intracellular "ribbons" (dense hollow structures about 0·1μ in width and up to 20.0μ in length which were found only in the fibroblasts of the mesodermal layer): Mitochondria (the structure of the mitochondria usually consisted of an external membrane surrounding a complex series of folds and indentations; variations in structure were noted): Collagen—extracellular fibres in the mesodermal layer having the appearance and dimensions of collagen. These were seen both in sections and in isolates obtained by tryptic digestion of the membranes. In sections, the fibrils appeared to be randomly oriented with respect to the surface of the fibroblasts.

The endothelial cells lining the blood vessels

of the mesoderm and the walls of the capillaries of the chorionic layer were often so thin that their complete extent could be seen only with the electron microscope.

II. A study of chick embryo cells grown on glass slides or roller tubes, and infected with different strains of Newcastle disease virus, led to the following conclusions: Infected epithelial cells may form long delicate projections from the surface of the individual cell. The projections apparently contain formed and partially formed virus particles. These characteristic "virus filaments" occur before morphological changes are detected in the substance of the cell. Their formation may be an exaggeration of the normal tendency of the cell to form short stubby surface projections. Fibroblasts on the other hand are usually destroyed, releasing scattered spherical virus particles. They form filaments, but less frequently.

III. Three strains of Newcastle disease virus representing a wide variation in virulence were studied in thin sections of the chorio-allantoic membrane. It appears that the virulent strain rapidly destroys host cytoplasm, both at the surface and deep within the cell. Apparent virus particles are found there.

The less virulent strain destroys few cells, causes hyperplasia, and seems to be continually present in increasing amounts in the surface layer of the cells. As in tissue cultures, this strain is manifest by a profusion of long filaments which seem to be modified microvilli. These may balloon at the tip and break open, or may break off in clusters of particles. The avirulent form of the virus is thereby released from the cell without causing cell destruction. Forms similar to those seen in tissue culture and in sections are found in infected allantoic fluid. It is suggested that the infectious "virus particles" thus released may not be free from host cytoplasm.

ANDRIANNE, V. F. (1953). Sur quelques cas fatals d'ornithose chez des pigeons Goura (*Goura cristata*—Pallas). Isolement du virus. Traitement à la terramycine. [**Fatal psittacosis in pompadour pigeons** (*Goura cristata*).]—*Ann. Méd. Vét.* **97**, 63-72. **3364**

The lesions observed in two pompadour pigeons which died from a natural infection of psittacosis were described; these consisted of liver-splenic enlargement, and marked enlargement of the kidneys which were yellowish in colour. Details were given of the isolation of the virus and its nature was discussed. Terramycin appeared to arrest the disease in two other sick pigeons.—F. T. W. JORDAN.

WALKER, R. V. L. & BANNISTER, G. L. (1953). **A filterable agent in ducks.**—*Canad. J. comp. Med.* **17**, 248-250. **3365**

The "agent" grew in hen's and duck's eggs and agglutinated fowl r.b.c.; agglutination was not inhibited by Newcastle disease serum but was inhibited by homologous serum. The latter did not inhibit N.D. virus. Bodies suggestive of pleuropneumonia-like organisms were seen, but cultures were negative.—R. GWATKIN.

MITCHELL, C. A., WALKER, R. V. L. & BANNISTER, G. L. (1953). **Further experiments relating to the propagation of virus in the bovine mammary glands.**—*Canad. J. comp. Med.* **17**, 218-222. **3366**

The viruses of Newcastle disease and influenza type A were propagated for 2 weeks in the bovine mammary gland following injections into the sinus. Antibodies appeared in the milk and blood with the disappearance of virus. The mammary glands resisted re-infection. Inactivated virus had disappeared on the second day.

—R. GWATKIN.

PUNTONI, V. (1952). La nature des virus filtrables et la théorie des protéines-virus. (Critique de la théorie autocatalytique.) [**Nature of filtrable viruses and the theory of virus-proteins.**]—*Schweiz. Z. allg. Path.* **15**, 502-516. [In French. Discussion p. 516 in German.] **3367**

P. discussed the concept of virus-proteins and the theory of their endogenous origin and multiplication, but on the basis of a review of the available evidence he preferred to regard viruses as living entities with an autonomous metabolism and reproduction.—E.V.L.

I. ANDERSON, T. F., RAPPAPORT, C. & MUSCATINE, N. A. (1953). **On the structure and osmotic properties of phage particles.**—*Ann. Inst. Pasteur.* **84**, 5-14. [In English.] **3368**

II. BEUMER, J. (1953). La spécificité de la fixation des phages sur les récepteurs microbiens. [**Specificity of phage fixation on bacterial receptors.**]—*Ibid.* 15-26. **3369**

III. NICOLLE, P., JUDE, A. & DIVERNEAU, G. (1953). Antigènes entravant l'action de certains bactériophages. [**Antigens inhibiting the action of certain bacteriophages.**]—*Ibid.* 27-50. **3370**

IV. WAHL, R. (1953). La semi-résistance aux bactériophages. [**Resistance to bacteriophages.**]—*Ibid.* 51-59. **3371**

V. WEIDEL, W. (1953). **Further studies on the membrane of "*E. coli*" B.**—*Ibid.* 60-65. [In English.] **3372**

VI. GOEBEL, W. F. & JESAITIS, M. A. (1953). **Chemical and antiviral properties of the**

somatic antigens of Phase II "*Sh. sonnei*" and of a phage-resistant variant, 11/3,4,7.—*Ibid.* 66-72. [In English.] 3373

VII. Jerne, N. K. & Skovsted, L. (1953). **The rate of inactivation of bacteriophage T4R in specific anti-serum. I. Salt. effect. II. Cofactor.**—*Ibid.* 73-89. [In English.] 3374

VIII. Graham, A. F. (1953). **The fate of the infecting phage particle.**—*Ibid.* 90-98. [In English.] 3375

IX. Hershey, A. D. (1953). **Intracellular phases in the reproductive cycle of bacteriophage T2.**—*Ibid.* 99-112. [In English.] 3376

X. de Mars, R. I., Luria, S. E., Fisher, H. & Levinthal, C. (1953). **The production of incomplete bacteriophage particles by the action of proflavine and the properties of the incomplete particles.**—*Ibid.* 113-128. [In English.] 3377

XI. Evans, E. A., Jr. (1953). **The origin of the components of the bacteriophage particle.**—*Ibid.* 129-142. [In English.] 3378

XII. Wyatt, G. R. & Cohen, S. S. (1953). **The bases of the desoxyribonucleic acids of T2, T4, and T6 bacteriophages.**—*Ibid.* 143-146. [In English.] 3379

XIII. Pardee, A. B. & Williams, I. (1953). **Enzymatic activity and bacteriophage infection. III.—Increase of desoxyribonuclease.**—*Ibid.* 147-156. [In English.] 3380

XIV. Bresch, C. (1953). **Genetical studies on bacteriophage T1.**—*Ibid.* 157-163. [In English.] 3381

XV. Adams, M. H. (1953). **The genotypically and phenotypically heat resistant forms in the T5 species of bacteriophage.**—*Ibid.* 164-174. [In English.] 3382

XVI. Weigle, J. J. & Bertani, G. (1953). Variations des bactériophages conditionnées par les bactéries hôtes. **[The influence of host bacteria on bacteriophage variations.]**—*Ibid.* 175-179. 3383

XVII. Visconti, N. (1953). **Genetics of bacteriophage.** — *Ibid.* 180-185. [In English.] 3384

XVIII. Benzer, S. & Jacob, F. (1953). Étude du développement du bactériophage au moyen d'irradiations par la lumière ultra-violette. **[Studies on bacteriophage development by means of ultra-violet light.]**—*Ibid.* 186-204. 3385

XIX. Latarjet, R. & Milétic, B. (1953). Action des ultra-violets longs et des visibles courts (3400-5500 Å) sur les complexes bactérie-bactériophage. **[Action of ultra-violet rays and of light rays (3400-5500 Å) on bacterium-bacteriophage systems.]**—*Ibid.* 205-217. 3386

XX. Bowen, G. (1953). **Kinetic studies on the mechanism of photoreactivation of bacteriophage T2 inactivated by ultraviolet light.**—*Ibid.* 218-221. [In English.] 3387

XXI. Jacob, F., Lwoff, A., Siminovitch, A. & Wollman, E. (1953). Definition de quelques termes relatifs a la lysogénie. **[Definition of certain terms connected with lysogenesis.]**—*Ibid.* 222-224. 3388

XXII. Lwoff, A. (1953). L'induction. **[Substances promoting the development of bacteriophages in bacteria.]**—*Ibid.* 225-241. 3389

XXIII. Huybers, K. (1953). **Cationic reversion of induced phage development in *Bacillus megatherium*.**—*Ibid.* 242-253. [In English.] 3390

XXIV. Jacob, F. (1953). Influence du régime carboné sur le développement des bactériophages. **[Influence of sources of organic carbon and nitrogen on the development of bacteriophages.]**—*Ibid.* 254-264. 3391

XXV. Siminovitch, L. (1953). **Biochemical modifications of the bacterial host during bacteriophage development.**—*Ibid.* 265-272. [In English.] 3392

XXVI. Bertani, G. (1953). Infections bactériophagiques secondaires des bactéries lysogènes. **[Secondary bacteriophage infections of lysogenic bacteria.]**—*Ibid.* 273-280. 3393

XXVII. Wollman, E. L. (1953). Sur le determinisme génetique de la lysogénie. **[The inheritance of lysogenesis.]** — *Ibid.* 281-293. 3394

XXVIII. Fredericq, P. (1953). Colicines et bactériophages. **[A comparison of the modes of action of colicines and bacteriophages.]**—*Ibid.* 294-312. 3395

XXIX. Jacob, F., Siminovitch, L. & Wollman, E. L. (1953). Comparaison entre la biosynthése induite de la colicine et des bactériophages et entre leur mode d'action. **[A comparison between the induced biosynthesis of colicine and bacteriophages, and between their modes of action.]**—*Ibid.* 313-318. 3396

In July 1952 an international colloquium on bacteriophage was held at the Centre Culturel International at Royaumont, the papers given covering every aspect of the present state of knowledge on the subject.

The study of the fixation of the phage to the bacterium—now revealed as consisting of (1) attachment to the bacterial cell by the protein part of the phage and (2) the penetration into the cell of the desoxyribose nucleic acid part of the phage—reaffirmed the specificity of this mechanism. The concept of semi-resistance was elaborated: semi-resistance of a bacterial strain

towards a particular phage is genetically determined, but the individual bacteria are phenotypically either fully sensitive or fully resistant. The intracellular phases of the phage cycle have been followed with labelled phage protein and phage nucleic acid. A very important new method of elucidating the stages of the phage cycle is the production of incomplete phage particles by the action of proflavin which does not allow the particles fully to mature, and analysis of these particles by means of labelled S and P. Very promising beginnings in the study of phage genetics have been made and progenies have been obtained showing a combination of markers derived from their parents; some phage variations, however, have been shown to be determined not genetically but by the bacterial host. Many papers were devoted to the phenomenon of lysogenicity. Its terms have been defined and the conditions of its induction studied. One of the most interesting features is the reversion by visible light of the induction of lysogenicity through ultra-violet irradiation. The last group of papers was devoted to the colicines, the curious antibiotics elaborated by certain intestinal bacteria, which in some respects resemble bacteriophages. Like phages, they become attached to the bacterial cells by means of specific receptors, and induction of colicine production is possible by means of ultra-violet irradiation. But, unlike phages, the colicines consist of protein only, they do not multiply in the bacterial cell and are not transmissible in series.

—A. Mayr-Harting.

Whitehead, H. R., East, A. & McIntosh, L. (1953). **The so-called 'nascent' bacteriophage phenomenon.**—*J. Dairy Res.* **20,** 60-64. 3397

High concentrations of phage were shown to inhibit but not to lyse heterologous strains of *Streptococcus cremoris* and *Str. lactis* not normally susceptible to its action.

—L. M. Jones.

Murphy, J. S. (1952). **Mutants of a bacteriophage of** *Bacillus megatherium*.—*J. exp. Med.* **96,** 581-587. 3398

Mutants of *B. megatherium* phages can be differentiated by the type of plaque they produce on a sensitive bacterial strain. Recombinations were isolated when a phage with one set of plaque characteristics was mixed with another type phage.—L. M. Jones.

Elford, W. J., Guelin, A. M., Hotchin, J. E. & Challice, C. E. (1953). Le phénomène de la bactériophagie chez les anaérobies (*Welchia perfringens*). [**Bacteriophage in** *Cl. welchii*.]—*Ann. Inst. Pasteur.* **84,** 319-327. 3399

Multiplication of phage occurred at the expense of the bacterial cells throughout their period of growth and damaged cells could be demonstrated by the electron microscope 15 min. after phage had been added to culture.

—E. G. White.

Abinanti, F. R., Welsh, H. H., Lennette, E. H. & Brunetti, O. (1953). **Q fever studies. XVI. Some aspects of the experimental infection induced in sheep by the intratracheal route of inoculation.**—*Amer. J. Hyg.* **57,** 170-184. 3400

Rickettsia were isolated from blood and/or faeces of 5 sheep (out of 6 receiving graded doses of *R. burneti*) during the 9 days after inoculation. No clinical disturbance was observed. Sera of all 6 developed complement-fixing and/or agglutinating antibodies. Three sheep lambed (53, 70 and 87 days after inoculation). In 2, parturition was associated with rise in antibody titre and isolation of rickettsia from blood, milk, faeces, urine and nasal and oral secretions during periods of 17 and 11 days, respectively, after parturition. During the same periods, similar isolations were made from in-contact sheep.—Ian Davidson.

Giroud, P., Boidé, D., Humann, H. & Faucheux, R. (1953). Deux épidémies de fièvre Q, le rôle des poussières. [**The role of dust in two Q fever epidemics.**]—*Bull. Acad. nat. Méd.* **137,** 29-31. 3401

In two postal sorting offices, 31 employees, all handling mail bags, developed Q fever. The bags had been conveyed in railway trucks which had previously carried animals; there were some positive reactors to serological tests for *R. burneti* among cattle, sheep and pigs in the neighbourhood. The infection is believed to have been due to inhalation of contaminated dust from the mail bags.—E.V.L.

Bingel, K. F. & Engelhardt, H. (1952). Genügen unsere Pasteurisierungsverfahren zur Unschädlichmachung des Q-Fieber-Erregers in der Kuhmilch? [**Is pasteurization effective against Q fever rickettsiae in cows' milk?**]—*Arch. Hyg., Berl.* **136,** 417-425. 3402

Exposure to a temperature of 85°C. for 7 sec. does not kill all *Rickettsia burneti*, but renders the majority inactive so that they fail to

produce characteristic phenomena in g. pigs. The immunizing action of the pasteurized material is to be regarded as the effect of an antigen vaccination. Pasteurization of milk contaminated with *R. burneti* is sufficient for practical needs.
—W. R. Bett.

See also absts. **3519** (report, Southern Rhodesia); **3520** (report, Grenada); **3521** (report, Bechuanaland); **3524** (report, U.S.A.).

IMMUNITY

Fink, M. A. & Quinn, V. A. (1953). **Antibody production in inbred strains of mice.**—*J. Immunol.* **70,** 61-67. 3403

Injections of egg albumen and pneumococcus polysaccharide into five inbred strains of mice resulted in variation in the antibody response according to the route of injection, the chemical constitution of the antigen and the age and the genetic make-up of the strain.
—A. Ackroyd.

Rice, C. E. (1953). **A consideration of the components concerned in the conglutinating activities of certain complements.**—*J. Immunol.* **70,** 497-502. [Author's summary modified.] 3404

Experimental data were examined which seemed to indicate that four major components were involved in the conglutinating activity of horse and pig complements. As with those making up the haemolytic complex, two were heat-labile, two were heat-stable, one of the latter inactivated by zymosan, the other by hydrazine or ammonia. Larger amounts of hydrazine or ammonia were required to inactivate the conglutinative activities of horse and bovine complements than their haemolytic properties for sensitized rabbit red cells. The question of whether there are a "haemolytic" and a "conglutinative" C′4 as suggested by Blomfield [*V.B.* **22,** 3424] was discussed.

McCarthy, E. F. & McDougall, E. I. (1953). **Adsorption of immune globulin by the young lamb after ingestion of colostrum.**—*Biochem, J.* **44,** 177-182. [Authors' summary modified.] 3405

Immunological, salt-precipitation and electrophoretic methods of investigation were combined in a study of (a) the changes in serum proteins of lambs on ingestion of colostrum at birth (b) the effect of delaying the ingestion of colostrum on these changes and (c) the occurrence of any proteinuria in this connexion. There was an increase in serum globulin largely due to one electrophoretic component and an appearance of antibody, when colostrum was given up to 29 hours but not at 48 hours or more after birth. Following the ingestion of colostrum there was a marked proteinuria, characterized by the presence of globulin and antibody.

Brion, A. (1953). Les phénomènes d'hétéro et d'iso-immunisation chez les animaux. Les groupes sanguins. Leur incidence sur la pathologie, l'élevage et l'insémination artificielle. **[Hetero- and iso-immunisation in animals. Blood groups and their influence on disease, breeding and artificial insemination.]** —*Zootec. e Vet.* **8,** 105-108 & 147-156. [In French.] 3406

A review and discussion of the literature on the subject. No new knowledge.
—I. W. Jennings.

See also absts. **3267-3271** (TB.); **3274** (swine erysipelas); **3289-3292** and **3294** (brucellosis); **3308** (bovine contagious pleuro-pneumonia); **3310** (mutual interference with immunity in mixed infections with *Br. melitensis* and *S. abortus-ovis* in goats); **3336-3337** (F. & M. disease); **3341** (rabies); **3346** (complement-fixation test for virus diseases); **3356** (distemper in mink); **3358** (paralysis following vaccination against Newcastle disease); **3359** (Newcastle disease).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Allen, N. N. & Dicke, R. J. (1952). **Cattle lice control by clipping.**—*J. econ. Ent.* **45,** 970-973. 3407

Clipping of the coat of cattle during the winter months, was followed by a substantial drop in the population of the biting louse, *Bovicola bovis.* The authors recommended that cattle should be clipped in late autumn and early spring in order to control these lice. In limited observations, clipping was not so effective for the control of the sucking louse *Solenoptes capillatus.*—D. W. Jolly.

Shanahan, G. J. (1953). **Prevention of body strike of sheep.**—*Agric. Gaz. N.S.W.* **64,** 328-332. 3408

Trials were carried out to determine the efficacy of "jetting" and spraying with various concentrations of D.D.T., benzene hexachloride (B.H.C.), toxaphene, chlordane and dieldrin (a chlorinated derivative of naphthalene) in the prevention of body strike of sheep. S. concluded that if a body strike wave threatens, a grazier would be well advised to spray his sheep with 1·0% D.D.T. or "jet" them with 0·3% to 0·5%

D.D.T. or 0·05% to 0·06% B.H.C. Irrespective of the chemical chosen an attempt should be made to wet the sheep thoroughly. Promising results were obtained with 0·1% dieldrin.

—M. D. MURRAY.

JACKSON, C. H. N. (1953). **Seasonal variations in the mean size of tsetse flies.**—*Bull. ent. Res.* **43**, 703-706. **3409**

A negative correlation was obtained between size of 3 species and saturation deficiency 2 months before, *i.e.*, at their time of emergence.

—BERYL A. KAY.

JOBLING, B. (1953). **On the blood-sucking midge *Culicoides vexans* Stager, including the description of its eggs and the first-stage larva.**—*Parasitology*. **43**, 148-159. **3410**

C. vexans attacks man and animals from April to early July, during the hours of daylight, particularly in the early evening. It occurs on clay soils, but has not been recorded in N. England or Scotland. The eggs are laid in soil and require four months to hatch. The larval stage lasts six months. J. observed that cattle are an important host for this parasite, and that the removal of cattle resulted in a large reduction of the local population of this midge.

—D. W. JOLLY.

KEMPER, H. E. & PETERSON, H. O. (1953). **Cattle scab and methods of control and eradication.**—*Fmrs' Bull. U.S. Dep. Agric.* No. 1017. pp. 26. **3411**

Symptoms, contagiousness and treatment of psoroptic, sarcoptic, chorioptic and demodectic mange were discussed. Dipping in lime-sulphur, nicotine, coal-tar-creosote (in soft water only) or benzene hexachloride gives effective control. Where dipping is impossible thorough spraying with B.H.C. may prove successful.

—BERYL A. KAY.

FURMAN, D. P. (1952). **Control of the northern fowl mite.**—*J. econ. Ent.* **45**, 926-930. **3412**

Eleven compounds, which included D.D.T., lindane, toxaphene, methoxychlor, sulphur, and nicotine sulphate, were screened for their efficiency against *Bdellonyssus sylviarum*. Although a number of these compounds were efficient in laboratory tests, none, with the possible exception of sulphur, effectively controlled this fowl mite under field conditions when applied as a dust or spray. This failure was attributed to the difficulty of bringing the parasite into contact with the acaricide.

—D. W. JOLLY.

ALEXANDER, R. M. (1952). **Tick paralysis. Report of a case in Florida.**—*J. Amer. med. Ass.* **149**, 931-932. **3413**

A clinical record of a case of tick paralysis in Florida. The patient and his dog had been on a fishing trip that involved walking through woods. He stated that before his own illness the dog, bitten by a tick (unnamed) had developed paralysis of the hind legs and died.

TRAVASSOS SANTOS DIAS, J. A. (1951). **List of Mozambique ticks and their known hosts.** —*Ann. Serv. Vet., Mozambique.* **3**, 227-252. [In English.] **3414**

A check list of (1) the known ticks of Mozambique, with the hosts on which they are parasitic and (2) of the hosts (mammals, birds, reptiles) with the names of the ticks which have been collected from them.—F.E.W.

ROBERTS, F. H. S. (1953). **The Australian species of *Aponomma* and *Amblyomma* (Ixodoidea).** — *Aust. J. Zool.* **1**, 111-161. **3415**

The Australian species of *Aponomma* and *Amblyomma* are found chiefly on marsupials, monotremes and reptiles. A few have been recorded on domestic animals, *e.g. Aponomma hydrosauri* from the horse and ox, *A. tachyglossi* from the ox, *A. simplex* from the horse and ox, and *A. trimaculatum* from the horse, *Amblyomma moreliae* from the horse and ox, and *A. triguttatum* which is a common parasite of the ox, horse and sheep in northern Australia.

R. described in detail 9 species of *Aponomma*, 3 being new, and 12 species of *Amblyomma*, 4 being new and one a first record for Australia. Numerous drawings and a series of excellent photographs were reproduced. In some cases larvae and nymphs were specially bred for description. Keys were given for the identification of the Australian species.

—H. McL. GORDON.

See also abstr. **3318** (experimental transmission of blackhead); **3429** (report, London School of Hygiene & Tropical Medicine); **3523** (report, Sweden); **3524** (report, U.S.A.).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

DURIE, P. H. (1953). **The paramphistomes (Trematoda) of Australian ruminants. II. The life history of *Ceylonocotyle streptocoelium* (Fischoeder) Nasmark and of *Paramphistomum ichikawai* Fukui.**—*Aust. J. Zool.* **1**, 193-222. **3416**

The eggs of *C. streptocoelium* hatched after 16 days at 27°C. and miracidia penetrated the planorbid snail, *Glyptanisus gilberti*, through the mantle cavity. Cercariae emerged 34 days

later. Adult trematodes were present in the rumen of sheep and cattle 48 and 56 days respectively after administration of encysted cercariae. At 20°C. the developmental period in the snail was twice as long.

Eggs of *P. ichikawai* hatched after 12 days and cercariae emerged from *Segnitilia alphena* 25 days after infection by miracidia.

D. described the molluscan intermediate hosts with notes on their bionomics.

—H. McL. Gordon.

Hunter, G. W., Freytag, R. E. & Ritchie, L. S. (1952). **Potential molluscacides screened in the laboratory and the results of preliminary field plot tests.**—*J. Parasit.* **38**, 509-516. 3417

Filter papers impregnated with various substances dissolved in water, ether, or acetone were placed in Petri dishes, their molluscicidal activity being judged by observing the fate of 10 adult snails left in the dish for 96 hours. The volatile solvents were allowed to evaporate before the snails were placed in the dishes.

Of 137 substances tested in this way 3 were effective in killing *Oncomelania nosophora*, the snail intermediate host of *Schistosoma japonicum*. These were 2,4,6-trichlorophenol (90% sol in ether), sodium pentachlorate plus 13% sodium salts of other chlorophenols (75% sol in water), 2,4,5-trichlorophenol (the sodium salt in aqueous solution). Copper pentachlorophenol (at a dilution of 1:500, given at 0·2 g. in 100 ml. of water/sq. foot) killed 96% of the snail population in 14 days in a field plot test.

—Jas G. O'Sullivan.

Kerr, K. B. & Green, H. E. (1953). **The taeniacidal activity of seven halogenated diphenyl methanes, a diphenyl propane and a diphenyl ether.**—*J. Parasit.* **39**, 79-83. 3418

Nine compounds were tested for anthelmintic activity against *Raillietina cesticillus* in chickens. 2,2′-Di-hydroxy-3,3′, 5,5′, 6,6′-hexachlorodiphenyl methane and 2,2′-di-hydroxy-3,3′, 4,4′, 5,5′, 6,6′,-octachlorodiphenyl ether, were highly effective. The authors discussed the importance of the chemical groups and their linkage in the compounds.

—Jas. G. O'Sullivan.

Jore D'Arces, P. (1953). L'échinococcose en Algérie. [*Echinococcus* **in Algeria.**]—*Bull. Off. int. Epiz.* **40**, May. pp. 45-51. [English summary.] 3419

A general article with no new information.

—Jas. G. O'Sullivan.

Kushlan, S. D. (1953). **Trichinosis with liver dysfunction, hypo-albuminemia, and typhoid agglutinins.**—*J. Amer. med. Ass.* **152**, 221-225. [Author's summary copied *verbatim.*] 3420

A carefully studied case of trichinosis, proved by muscle biopsy, is presented. There was evidence of widespread dissemination of the disease with involvement of the lungs, the heart, and the liver, in addition to the involvement of the skeletal muscle, the eyes, and the gastro-intestinal tract. In addition to serial studies of the blood cell count, the serum proteins, and the typhoid agglutinations, apparently new and previously unreported data on the liver function in trichinosis are also reported.

Trichinosis is a very prevalent and serious disease and must be considered in the differential diagnosis of many disorders with nausea, vomiting, diarrhea and abdominal pain, with or without muscle pains; it may produce liver dysfunction.

The hypoalbuminemia of trichinosis may be due to a combination of liver dysfunction and protein deficiency and should be treated vigorously.

Gomberg, H. J. & Gould, S. E. (1953). **Effect of irradiation with cobalt-60 on trichina larvae.**—*Science.* **118**, 75-77. 3421

Measurements were made to find the maturation-inhibiting dose and sexual-sterilizing dose for isolated larvae and larvae encysted in rat muscle exposed to cobalt 60 irradiation at a rate of 1250 r/min. The maturation-inhibiting dose was 18,000 r. and complete sterilization was achieved by submitting infected muscle to 15,000 r. Lethal doses for larvae in muscle were probably higher than the 700,000 r. necessary for killing isolated larvae.

—Jas. G. O'Sullivan.

Sinclair, D. P. (1953). **An unsuccessful attempt to produce resistance to phenothiazine in** *Trichostrongylus colubriformis* **of sheep.**—*Aust. vet. J.* **29**, 13-16. 3422

Reports from the field in New Zealand during 1949 suggested that treatment with phenothiazine was not as effective as in previous years. The possibility that drug-resistant strains of species of *Trichostrongylus* may have developed was examined in two experiments. A strain of *T. colubriformis*, isolated from a flock which had never been drenched with phenothiazine, was established in sheep at the laboratory. Two sub-strains were developed: one, the "original", was maintained in sheep which were not treated, and the other, the "phenothiazine", was developed by establishing a new infestation in another

sheep using larvae from worms which had survived a dose of 10–15g. phenothiazine. This method was repeated at intervals of 2 months throughout the year. After 6 generations the larvae of both strains were used to infest two groups of 10 worm-free lambs. When the resulting infestations were 22 days old all lambs were dosed with 20 g. phenothiazine (as tablets). Seven days later when the lambs were killed and the remaining worms counted, the mean number of the "original" strain was 5,430, and of the "phenothiazine" strain, 9,420, a difference suggesting that some resistance had developed.

In a second trial along similar lines with 2 groups of 13 lambs, the residual worm burdens were 8,250 for the "original" strain and 9,010 for the "phenothazine" strain. Untreated controls were included in the trial and a comparison of residual worm burdens showed a degree of efficiency of approx. 50% for both strains. Thus, the "phenothiazine" strain did not appear to have become resistant to phenothiazine.

—H. McL. Gordon.

Alicata, J. E. (1953). **Observations on the lethal action of polyborate on swine kidney-worm** (*Stephanurus dentatus*) **larvae in soil.** —*J. Parasit.* **39**, No. 4—Sect. 2. p. 36. [Only abst. given. Abst. from abst.] **3423**

"Polybor-3" (a combination of sodium pentaborate tetrahydrate and sodium tetraborate pentahydrate), when applied dry or sprayed on soil at the rate of 5 lb. per 100 sq. ft., was lethal to larvae of *S. dentatus* mixed with the soil up to a depth of 1 in. The percentage of viable larvae recovered from treated soil in contrast with corresponding untreated controls, was 9·7 to 15·1% at 10 days after treatment. Rabbits fed infested treated soil or larvae recovered from such soil 10 days after treatment had only a few liver lesions at necropsy one month later. No lesions were found in rabbits or a pig fed treated infested soil 20 days after it had been treated. All control animals had extensive liver lesions at necropsy. Eggs of *S. dentatus* when mixed with treated soil at intervals up to 28 days after it had been treated and exposed to light rainfalls, hatched normally, but the larvae died before reaching the infective stage. In one experiment, however, where the eggs were mixed with soil 35 days after it had been treated and subjected to heavy rainfalls, the larvae developed normally to the infective stage. A young pig kept for one month in a small enclosed area which was treated twice with "Polybor-3" remained apparently healthy.

Smirnov, G. G. (1948). **[Penetration of** *Ancylostoma duodenale* **into the skin** *in vitro*.]—*Epidemiological-parasitological expeditions to Iran and parasitological investigations. Akad. Nauk. Moscow & Leningrad.* pp. 335-340. [In Russian.] **3424**

In a series of 6 experiments, involving the use altogether of 2,148 larvae, some of *A. duodenale* and some of *Necator americanus* were placed for periods of 15, 30, 45 and 60 min. respectively on 4 identical patches of skin cut from freshly killed hamsters and the number of penetrations counted, the patches of skin being stretched on frames in contact with water at 38° to 40°C. The percentages of larvae burrowing into or through the skins for each of the 4 periods were 49, 58, 72 and 87 respectively, out of which 1·5, 9, 13 and 20% respectively made complete penetration. *A. duodenale* was more active than *N. americanus* in the proportion 19:2.—F.A.A.

Keith, R. K. (1953). **The differentiation of the infective larvae of some common nematode parasites of cattle.**—*Aust. J. Zool.* **1**, 223-235. **3425**

The infective larvae of *Strongyloides papillosus, Haemonchus contortus, Ostertagia ostertagi, Trichostrongylus axei, Cooperia oncophora, C. punctata, C. pectinata, Bunostomum phlebotomum, Nematodirus* spp. and *Oesophagostomum* (*Bosicola*) *radiatum* from cattle were described and illustrated in photographs. Means for differentiation were discussed. There are clear differences between the infective larvae of the sheep and cattle strains of *H. contortus*, the latter being larger and having a longer tail.

Comparisons were made with the measurements and descriptions given by other authors. K. pointed out that larvae of *O. radiatum* did not stretch out completely, to enable measurement, when killed with dilute iodine solution. Heat was necessary.

A key for the differentiation of the larvae was given. With some experience they can be differentiated with the low power of the microscope. Most can be identified by the appearance of the tail of the sheath alone.

—H. McL. Gordon.

Vicente, S. (1953). Verminosis gástricas del cerdo. **[Parasitic gastritis in pigs in Spain.]**—*Bol. Cons. Col. vet. Esp. Suppl. cient.* **7**, 179-190. **3426**

An account of gastritis in pigs in several Spanish provinces, caused by worm infestation. The species concerned were *Physocephalus sexalatus, Simondsia paradoxa, Ascarops strongylina* and *Hyostrongylus rubidus*. Of 393 pigs used for serum production or sent in for

P.M. examination, 174 were infested with one or more of these species, which gave rise to varying degrees of gastritis.—A.S.

FURCHNER, H.-O. (1952). Über die Lebensfähigkeit von Askarideneiern in Hauskläranlagen. **[Viability of ascaris eggs in sewage.]** —*Inaug. Diss., Munich.* pp. 45. 3427

Ascarid eggs of dog, horse, man, pig and calf, placed in various containers of silk, wood and aluminium, in sewage, were examined at intervals up to a year. After this time there was no further embryonation except in a few eggs of horse, calf and pig ascarids, in which, however, no moulting occurred.—M. L. CLARKE.

SCHWABE, C. W. (1951). **Studies on *Oxyspirura mansoni*, the tropical eyeworm of poultry. II. Life history.**—*Pacific Sci.* **5,** 18-35. [For part I, see *V.B.* **23,** 3117; for part III, *V.B.* **21,** 1054.] 3428

Wild birds are not an important reservoir of *O. mansoni*. The secondary host is *Pycnoscelus surinamensis*, the burrowing cockroach. Artificially infected laboratory-reared cockroaches and chicks were examined at suitable intervals, the results being described in detail with diagrams and tables giving measurements of anatomical features. There is a bibliography of 27 references.—BERYL A. KAY.

KARTMAN, L. (1953). **Factors influencing infection of the mosquito with *Dirofilaria immitis* (Leidy, 1856).**—*Exp. Parasit.* **2,** 27-78. 3429

Females of *Aedes aegypti, Culex quinquefasciatus* and *Anopheles quadrimaculatus* were allowed to engorge on infested blood and 10 of each species that had so fed were dissected on subsequent days. Location, numbers and stages of the parasite were recorded and a concept of host efficiency derived, being the theoretical number of microfilariae ingested by a group of mosquitoes and total number of developing larvae found in them during a specific period. —BERYL A. KAY.

See also absts. **3318** (experimental transmission of blackhead); **3517** (report, London School of Hygiene & Tropical Medicine); **3518** (report, Ministry of Health, Gt. Britain); **3521** (report, Bechuanaland).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

NANTS, H. C., FOWLER, G. A. A. & BOGATKO, F. H. (1953). **A review of the influence of bacterial infection and of bacterial products (Coley's toxins) on malignant tumors in man.** —*Acta med. scand.* Suppl. No. 276. pp. 103. [In English.] 3430

In 1892, W. B. Coley began the treatment of inoperable malignant disease in man by injections of "toxins", using a mixture of *"Streptococcus erysipelatos"* and a filtrate of *"Bacillus prodigiosus"*. In the last 60 years many different types of "Coley's toxins" have been used. The present authors analysed the results of this form of therapy and in this monograph gave details of 30 cases which Coley treated, together with a short review of the subject, including references to the literature. The striking success of Coley's work suggests that the method deserves further study.—E. G. WHITE.

ARTYUKH, I. A., YAZUIKOVA, K. N. & OSTASHEVSKI, A. G. (1953). **[Neurofibromatosis of cattle.]**—*Veterinariya, Moscow.* **30,** No. 4. pp. 49-53. [In Russian.] 3431

An account of neurofibromatosis in a 9-year-old cow. Capsular neurofibromatous swellings were present along certain nerves of the neck, back, flanks and thorax. In some the histology of the lesions resembled that of a spindle-celled sarcoma. The authors speculated as to the aetiology of the condition.—F.A.A.

PAMUKCU, A. M. & BASKAYA, H. (1952). Leucosis complex. I. Ankara'da tavuklarda görülen visceral lymphomatosis olayları. **[Leucosis complex in fowls (in Turkey).]**—*Tarim Bakan. Tavukçuluk Enst. Yayinlari.* **11,** No. 2. pp. 3-25. [In Turkish. English summary.] 3432

A description of an outbreak of visceral lymphomatosis in fowls at the Institute of Animal Husbandry, Ankara, in 1952, being the first recorded occurrence of the disease in Turkey. In 12 out of 14 birds examined P.M. the main lesions were in the liver, kidneys, and spleen, other organs being less commonly affected. Histologically the lesions, wherever they occurred, consisted of massive accumulations of lymphoid cells, proliferating both intra- and extra-vascularly.—A.S.

ECKERT, E. A., BEARD, D. & BEARD, J. W. (1951). **Dose-response relations in experimental transmission of avian erythromyeloblastic leukosis. I. Host-response to the virus.**—*J. nat. Cancer Inst.* **12,** 447-463. [Authors' summary modified.] 3433

The authors studied dose-response relations in the experimental transmission of avian erythromyeloblastic leucosis by virus present in filtered plasma from leucotic chicks. They observed a linear relationship between dose in log millilitres of plasma and the reciprocal of the latent period. A similar relationship was found between log dose in ml. of plasma, and the incidence of positive inoculations expressed in probits. Both relationships were found suitable for bioassay of the leucosis virus under conditions practical for large-scale work.

See also abst. **3536** (chemical induction of cancer).

NUTRITIONAL AND METABOLIC DISORDERS

MacKay, A. M., Riddell, W. H. & Fitzsimmons, R. (1953). **Terramycin supplement for dairy calves.**—*J. Anim. Sci.* **12,** 19-23. 3434

Terramycin fed to calves gave a significant increase of growth up to 12 weeks of age, but was not effective in older calves.—R. A. Huck.

Hewitt, A. C. T. (1953). **Dairy cattle feeding trials: concentrates v. no concentrates.**—*J. Dep. Agric. Vict.* **51,** 193-200 & 229-232. 3435

In feeding trials, extending over three years, it was found that cows fed adequately on pasture, supplemented with grass-clover hay, produced milk and butterfat more economically than cows on pasture with concentrates—mainly oats and linseed meal—as additional food. A large portion of each experimental farm was irrigated. Data were given on irrigation water and rainfall, stocking rate, production figures and supplementary feeding.

Pasture consumption was measured by using wire enclosures and cutting samples before and after grazing. Considerable variations were recorded in the data. However, the results of these data indicated that a very large proportion of grass rots in the paddock without ever being grazed and this loss may approximate 45% of pasture growth.

Concentrates were more effective in increasing production in the flush of the season than in mid-winter.—M. C. Franklin.

Link, R. P. (1953). **A study of the effect of repeated intraperitoneal injections of glucose in pigs.**—*Amer. J. vet. Res.* **14,** 150-159. 3436

Of 20 pigs given daily i/p injections of 20% glucose, 10 developed mild hyperglycaemia which did not persist after the injections were discontinued, 6 developed persistent hyperglycaemia and 4 became weak and comatose and died or were killed. Glucose tolerance tests on the pigs with persistent hyperglycaemia indicated impaired tolerance.

Glycosuria, ketonaemia and ketonuria were mild in most of the pigs.

The results were discussed in relation to the hormonal control of carbohydrate metabolism in the pig.—J. T. Done.

Fauconneau, G. & Chevillard, L. (1953). Le métabolisme de la lysine, de la cystine et de la méthionine par les bactéries du rumen de mouton au cours d'incubations *in vitro*. [*In vitro* **metabolism of lysine, cystine and methionine by microflora of the rumen of sheep.**]—*C. R. Soc. biol. Paris.* **147,** 69-72. 3437

An optimum amino-acid content (lower for high-grade fresh than for dry fodder) appeared to be required for the growth of this flora.

—G. P. Marshall.

Armstrong, R. H., Thomas, B. & Horner, K. (1953). **The availability of calcium in three herbs of grassland.**—*J. agric. Sci.* **43,** 337-342. [Authors' summary slightly modified.] 3438

The availability of the calcium in three common herbs, viz. narrow-leaved plantain *Plantago-lanceolata,* chicory *Cicorium intybus,* and burnet *Poterium sanguisorba,* was investigated using the rat as the experimental animal.

Parallel methods used for the determination of calcium balance involved (a) the analysis of feed, faeces and urine, and (b) carcass analysis.

The availability of the calcium, while high in all three species, was in the order plantain, chicory and burnet. All differences between means were significant at $P = 0{\cdot}05$.

There was shown to be some evidence of inverse relationships between fibre content and calcium availability, and between oxalic acid content and calcium availability.

Boge, B. (1952). Untersuchungen über tagesrhythmische Schwankungen des Calciumgehaltes im Blute gesunder Pferde. **[Daily variations in the blood calcium levels of normal horses.]**—*Inaug. Diss., Hanover.* pp. 20. 3439

The blood calcium level in horses was

highest during the night, the average variations between day and night levels being 1·76 mg.%.
—F. R. HARRIS.

SEEKLES, L. (1953). Het tetanie-vraagstuk bij het rund. **[The problem of tetany in cattle.]** —*Tijdschr. Diergeneesk.* **78**, 1-23. [English, French and German summaries.] **3440**

Although hypomagnesaemia is found to be a symptom in grass tetany and often in intestinal auto-intoxication (" indigestion ") it was concluded from food analysis that absolute deficiency of magnesium in cattle in the Netherlands is exceptional. Seventy-three per cent. of the cases of tetany develop during the first 2 weeks at pasture. This time is too short for development of a real deficiency disease. Symptoms are: intestinal disorders, tetany, often ketosis, dehydration of the blood, acidosis (sometimes alkalosis), hypomagnesaemia, hypocalcaemia and hyperphosphataemia. Although it is possible that the majority of these symptoms are stimulated by histamine formed in the intestines this cannot be the only factor. It is supposed that a still unknown biogenic poison that influences the magnesium regulation may play an important part.—C. A. VAN DORSSEN.

BURNS, C. H., CRAVENS, W. W. & PHILLIPS, P. H. (1953). **The sodium and potassium requirements of the chick and their interrelationships.**—*J. Nutr.* **50**, 317-329. [Authors' summary modified.] **3441**

The minimum requirements for sodium and potassium of chicks fed semi-purified diets for the first few weeks of life were found to vary with the rate of growth. The requirement for sodium was found to lie between 0·10 and 0·30%, and that for potassium between 0·23 and 0·40%, the higher levels being required for maximum growth. The level of potassium appears to have no effect on the Na requirement, provided it is not a limiting factor.

The requirement for chloride was found to be less than 0·06%, and thus lower than its equivalent of the amount of sodium required.

Sodium and potassium were each found to be toxic if fed greatly in excess of the other, and this toxicity could be overcome by raising the level of the other element. Under certain conditions, a slight sparing action could also be observed between the two elements.

KYRNING, S. (1952). **On the chemical assay of vitamin A and carotenoids in hen's eggs.**—*Int. Z. Vitaminforsch.* **24**, 263-271. [In English. French and German summaries. English summary modified.] **3442**

K. described a method for the assay of vitamin A and carotenoids in hen's eggs, based on chromatographic analysis of the unsaponifiable fraction of eggs using calcium carbonate as adsorbent. Vitamin A is determined at 6200 Å in the presence of antimony trichloride. Carotenoids are estimated at 4500 Å, pure β-carotene being used as the standard for calibrating the spectrophotometer. K. applied the method to egg analyses in connexion with feeding tests with fowls; he presented some results of these experiments.

OBEL, A.-L. (1952). O nutritivnom oštećenju (T. ZV. toksičnojdistrofiji) jetara u svinja. **[A nutritional disease of the liver in pigs.]**—*Vet. Arhiv.* **22**, 173-176. [English and German summaries.] **3443**

In Sweden toxic hepatodystrophy of young pigs is usually observed when the animals are 6 weeks–3 months old. A clinical diagnosis is practically impossible, but the lesions in the liver are fairly typical: congestion and multiple haemorrhages in acute cases, diffuse cirrhosis when the disease is chronic.

The feeding of a ration deficient in vitamin E and certain amino acids reproduces the disease experimentally.—I. MARTINI.

THOMPSON, J. J. & SMITH, N. C. (1953). **Exudative diathesis in chicks in New Zealand.**—*Aust. vet. J.* **29**, 89-97. **3444**

The authors described an exudative diathesis occurring on a large scale in chickens in New Zealand. They presented evidence that the condition is a nutritional one which can be prevented by the administration of *dl* α tocopherol. Clinical signs appeared about 20 days after hatching. There was loss of condition, leg weakness and subcutaneous oedema. Morbidity varied from 10 to 100% and mortality from *nil* to 80%. The gross pathology was s/c oedema, together with inflammation or capillary haemorrhage of the subcutis, muscle and fatty tissues. There was also severe necrosis of skeletal, gizzard and heart muscles. The histopathology was described.—K. G. JOHNSTON.

MOSONYI, L., SZÖKE, A. & VAJDA, J. (1952). Über die Wirkung der Vitamine auf die durch Antibiotica herbeigeführte Phagozytosenhemmung. **[Action of vitamins on the inhibition of phagocytosis following treatment with antibiotics.]**—*Int. Z. Vitaminforsch.* **24**, 255-262. [In German. English and French summaries.] **3445**

Reduced phagocytosis following experimental treatment with penicillin and streptomycin in g. pigs and rabbits was successfully counteracted by administration of water-soluble vitamins.—E.G.

LLOYD, C. W., HUGHES, E. C., LOBOTSKY, J., RIENZO, J. & AVERY, G. M. (1952). **Some hormone studies in normal and toxemic pregnancy.**—*J. clin. Invest.* **31,** 1056-1063. [Authors' summary copied *verbatim.*] **3446**

No increase in antidiuretic activity of serum is detectable during normal or toxemic pregnancy, total corticosteroid increase throughout pregnancy reaching a peak before delivery. Freely-water-soluble corticosteroid increases throughout pregnancy. A poorly-water-soluble material appears during the first trimester and increases until the end of pregnancy, constituting 25 per cent of the corticosteroid.

In toxemia corticosteroid is considerably increased above the level found in normal pregnant women at the same stage of pregnancy. The poorly-water-soluble component is also considerably increased above that seen in the normal representing approximately 35 per cent of the normal corticosteroid. In one patient with eclampsia, paper chromatography demonstrated a material which has a rate of flow characteristic of 3-oxygen-containing steroids.

The possibility that this material might play a part in the etiology of eclampsia is discussed.

TERNER, C. (1951). **Pathways of pyruvate metabolism in the mammary gland.**—*Biochem. J.* **50,** 145-154. **3447**

Utilization of pyruvate by mammary gland tissue appeared to proceed by two paths—synthetic reactions and oxidation *via* the citric acid cycle. About two molecules of pyruvate appeared to be used for synthesis to one oxidized. The presence of 2:4 dinitrophenol inhibited synthetic reactions which depended upon phosphate bond energy, thus causing pyruvate to be largely oxidized rather than used for synthesis.—R. MARSHALL.

BAHNER, F. (1953). Die endokrine Regulation des Hungerstoffwechsels. I. Die Fastenketosis bei hypophysektomierten, adrenalektomierten, alloxandiabetischen und Zwerg-Mäusen. **[Endocrine control of metabolism during hunger. I. Ketosis in fasting dwarf mice, alloxan-diabetic mice and others after the removal of pituitary and adrenal glands.]** —*Acta endocr. Copenhagen.* **13,** 213-226. [In German. English summary modified.] **3448**

Hypophysectomized mice and pituitary dwarf mice had a lowered fasting ketonaemia. "Pygmy" mice had a normal or an elevated fasting ketonaemia. Adrenalectomized mice had a normal fasting ketonaemia. Alloxan diabetic mice had a lowered fasting ketonaemia. In the fasting state another pituitary hormone is secreted in addition to A.C.T.H. It has the effects of the diabetic substance which has as yet not been separated with certainty from the growth hormone. It was shown in detail that through endocrine influence the intermediate metabolism in the fasting state is the same as in a mild diabetes or that the intermediate metabolism in diabetes is a pathologically enhanced fasting state.

Controversies still exist concerning the influence of the adrenal cortex on fat metabolism.

MOSZKOWSKA, A. & LEROY, P. (1953). Modifications histologiques de la thyroïde de rats ovariectomisés et surrénalectomisés, soumis à des injections de cortisone. **[Effect of cortisone on the histology of the thyroid gland in ovariectomized and adrenalectomized rats].** —*C.R. Soc. biol. Paris.* **147,** 9-13. **3449**

When cortisone was administered to ovariectomized, adrenalectomized rats there were signs of stimulation of thyroid secretion, this stimulation probably being an indirect result of pituitary activity.—R. MARSHALL.

MANUNTA, G. (1953). Influenza dell'ormone tiroideo su alcuni caratteri di precocità. **[Action of thyroxin on new-born puppies.]**—*Arch. vet. Ital.* **4,** 35-41. [English, French, German and Spanish summaries.] **3450**

Daily injections of 0·1 mg. of thyroxin accelerated opening of eyelids and teething in new-born puppies, as well as retarding growth. M. therefore deduced that certain signs of precocity may be associated with a moderate degree of hyperthyroidism.—G. P. MARSHALL.

DAVIES, B. M. A. & GORDON, A. H. (1953). **The effect of parathyroid hormone on phosphate excretion in the rat.**—*J. Endocrin.* **9,** 292-300. [Authors' summary modified.] **3451**

The magnitude of the decrease in serum inorganic phosphate and the increase in urine phosphate of parathyroidectomized rats caused by injected parathyroid hormone were studied. About 3 U.S.P. units of this hormone were found to cause maximum changes in both serum and urine phosphate. Both responses depend on the respective initial phosphate level. Where the urine phosphate levels were too high they were reduced by feeding diets containing aluminium sulphate.

ROMIJN, C. & LOKHORST, W. (1953). De invloed van jodium op de physiologische activiteit van de kip. **[The influence of iodine on the physiological activity of the fowl.]**—*Tijdschr. Diergeneesk.* **78,** 369-392. [English, French and German summaries.] **3452**

Iodine in inorganic form (KI) and as sea-

weed meal was fed to laying hens in proportions of the ration varying from 1–10%. Respiratory metabolism (the apparatus used was described and illustrated) and egg production were not influenced. Histological changes in the thyroid gland were observed. The excretion in the eggs varied from 903 to 187μg. iodine.

—C. A. VAN DORSSEN.

See also abst. 3356 (influence of diet on effectiveness of distemper vaccination in mink).

DISEASES, GENERAL

ROWLAND, S. (1953). **Isotopes as an aid to diagnosis.**—*Edinb. med. J.* **60,** 149-168. [Author's summary modified.] **3453**

R. pointed out that the possibilities of studying abnormal metabolism by means of isotopes are not confined to the two cases which he discussed, iodine and iron. Obviously these methods could be expanded for the study of other elements and of other compounds suitably labelled. In cancer diagnosis only brain tumours were mentioned in this lecture, but much work had been done in the localizing of other types of tumour. Isotopes could be used to investigate not only the circulation of blood but also the circulation of cerebrospinal fluid and to find the position of the blockages. Renal function and exchanges between body fluids had been studied, but these were not mentioned in the lecture; nor the possibilities of investigating respiration. There was therefore much which had not been touched on. The procedures had only been described in outline and the techniques might appear very easy. This was far from being the case: there were many pitfalls, and sources of error, and the radiation hazard was always present both to the patient and investigator. The radio-active isotopes themselves had to be handled with precautions not unlike those taken with pathogenic bacteria. Some people had taken to using radio-active isotopes merely because they were new in medicine. Because of the hazard, they ought not to be used unless conventional methods would not achieve the same object. It was necessary to exercise great care in the use of radiation, including its use in diagnostic X-ray procedures, because of the cumulative genetic effect of ionizing radiations. The mutations produced were thought largely to be recessive, but this could still be serious if an appreciable fraction of the population became subject to radiation with the industrial use of atomic energy. Obviously, isotopes had an important part to play in the future of diagnostic medicine and we might yet find in the black bag of the practitioner a pocket "X-ray tube" and a scintillation counter.

BOUCKAERT, J. H. (1953). Ontsteking en behandeling van de ontsteking. [**Inflammation and treatment of inflammation.**]—*Vlaam. diergeneesk. Tijdschr.* **22,** 21-31. [English, French and German summaries.] **3454**

A discussion on the literature.

—C. A. VAN DORSSEN.

FRACCHIA, A. A. & BRUNSCHWIG, A. (1952). **Hyperthermia (114°F rectal) with recovery.** —*J. Amer. med. Ass.* **149,** 926-927. **3455**

A record of a temp. of 114°F. (rectal) in a middle-aged woman, with recovery. The temperature was checked with other thermometers; the height of the column of mercury was, of course, beyond the calibrated section, so the recording of the thermometers was checked afterwards in a water bath.

CHUBUK, A. A. & GRITSENKO, V. G. (1953). [**Treatment of haematuria in cattle.**]—*Veterinariya, Moscow.* **30,** No. 4. pp. 14-16. [In Russian.] **3456**

Various remedies having proved themselves to be ineffective, the authors treated 38 cows with phenothiazine and were successful in 34 cases after 2–3 applications. In the 4 failures the disease was of long standing. The dose was 0·1–0·2 g./kg. live weight given in water or in pills made with equal quantities of flour, repeated at 2–3 day intervals. The action of the drug appears to be through the bacterial action of the products of its decomposition (thianol, leucothianol & phenothiazone) on the organs of the urinary system. Later 5 other cases with symptoms 10–30 days old were treated similarly, coupled with irrigation of the bladder with 500 ml. of a solution 1 g. iodine crystals and 2 g. potassium iodide in 2 litres of water. Urine was previously withdrawn. Irrigation was done twice a day at a 6–8 hour interval and repeated every 2–3 days. Symptoms of haematuria disappeared after 6–10 days. No relapses occurred during the following 2–14 months of observation in all 39 cases.—F.A.A.

FONTANELLI, E. (1953). Le cherato-congiuntiviti negli ovini e nei caprini. [**Rickettsial, parasitic and bacterial forms of kerato-conjunctivitis in sheep and goats.**]—*Zooprofilassi.* **8,** 141-142 & 144-146. **3457**

F. described the symptoms and discussed

the treatment of rickettsial conjuctivitis and compared it with the kerato-conjuctivitis of contagious agalactia. Among other causes of eye-damage he listed heat, cold, reflected light, vitamin A deficiency and filariasis.

—I. W. JENNINGS.

LONGWILL, A. (1952). **Survey of losses in pigs on New Zealand farms, 1949/51.**—*N.Z. J. Tech.* Sect. A. **34**, 294-305. 3458

Losses in unweaned pigs were 27·4% of the piglets born. "Born dead" and "died at birth" accounted for a total of 15·1%, but the greatest cause of loss in viable sucklings was overlying by the sow (8·4% of total, or 9·8% of viable pigs). Only 1% of the loss was ascribed to disease. Deaths in weaned pigs were 3·6% of pigs born (4·7% of pigs weaned). Low litter frequency and low fertility combined to produce a low output of pigs per sow (15·8 *per annum*). The report recommended attention to the nutrition of sows, the provision of artificial heat in farrowing houses and investigation of the causes of death of so large a proportion of pigs at birth.—J. T. DONE.

STEEL, J D., MCGOVERN, V. J. & KEEP, J. M. (1953). **Retinopathy in dogs.**—*Aust. vet. J.* **29**, 104-108. [Authors' summary modified.] 3459

Twenty cases of clinically detectable retinopathy in mongrels and common breeds of dogs were described. Clinically, the retinopathy is characterized by defective vision, gradual loss of retinal transparency and the accumulation of pigment masses. Pathologically, it is characterized by pigment changes and oedema.

Although there was a clinical association between the occurrence of the retinopathy and an attack of a distemper-like illness, this may have been fortuitous and no definite conclusion as to the aetiology of the condition was possible.

DANIELS, W. B. & MACMURRAY, F. G. (1952). **Cat scratch disease; nonbacterial regional lymphadenitis: a report of 60 cases.**—*Ann. intern. Med.* **37**, 697-713. 3460

An analysis of 60 cases of cat-scratch disease. Evidence of a primary lesion was found in 28. Suppuration of lymph-nodes with sterile pus developed in 22. The axillary nodes are most frequently involved, with a characteristic microscopic pattern. Almost invariably there is a history of contact with cats.—W. R. BETT.

STEVENS, H. (1952). **Cat-scratch fever encephalitis.**—*Amer. J. Dis. Child.* **84**, 218-222. 3461

More than 100 cases of cat-scratch fever have been reported, all emphasizing its benign and self-limiting nature. S. reported cat-scratch fever associated with encephalitis in a boy aged 13 years. Penicillin proved ineffective, but aureomycin promptly relieved the symptoms and the fever.—W. R. BETT.

HALL, W. J. & WEHR, E. E. (1953). **Diseases and parasites of poultry.**—*Fmrs' Bull. U.S. Dep. Agric.* No. 1652. pp. 91. 3462

A comprehensive and well illustrated revision of previous bulletins for farmers by different authors. Methods of treatment are up to date and practicable control measures are discussed.—M. L. CLARKE.

See also abst. **3523** (report, Sweden).

POISONS AND POISONING

LIENERT, E. & SEBESTA, E. (1953). Die BAL-Therapie bei der Thalliumvergiftung der Fleischfresser. **[Treatment of thallium poisoning in dogs and cats with B.A.L. (British Anti-Lewisite).]**—*Wien. tierärztl. Mschr.* **40**, 327-332. [English, French and Italian summaries.] 3463

B.A.L. was an effective antidote to thallium poisoning in dogs if treatment was begun before the appearance of pronounced symptoms. Four milligrams were injected i/m every 4 hours for the first two days, every 6 hours on the third day, and twice daily from the fourth to the eighth day. The drug was ineffective in cats.

—A.S.

SHELDON, G. C. & YORKE, A. (1953). **A syndrome associated with the ingestion of chemically "improved" flour.**—*Lancet.* **264**, 577-578. 3464

A description of illness in a woman patient who reacted allergically to wheat flour which had been treated with nitrogen trichloride (agene) or with chlorine dioxide. The authors speculated whether this might have been an isolated case of allergy, or the first recognition of a common disorder.—A.S.

DAVIDSON, A. N. (1953). **Some observations on the cholinesterases of the central nervous system after the administration of organophosphorus compounds.**—*Brit. J. Pharmacol.* **8**, 212-216. [Author's summary modified.] 3465

A description of the effect of the injection of five organic phosphorus compounds upon the

true and pseudo cholinesterase of the brain, spinal cord, and sciatic nerves of fowls. Two compounds produced demyelination and three did not. There was no essential difference in the duration of the inhibition of true and pseudo-cholinesterase produced by these agents, and none resembled tri-ortho-cresyl phosphate. Di-isopropyl fluorophosphonate reduces the pseudo-cholinesterase of rats, but does not produce demyelination. These observations do not support the theory that prolonged depression of pseudo-cholinesterase is an essential prerequisite of demyelination in fowls.

MATHAMS, R. H. & SUTHERLAND, A. K. (1952). **The oxalate content of some Queensland pasture plants.**—*Qd. J. agric. Sci.* **9**, 317-334. 3466

An analysis was made of the water soluble and total oxalate contents of 80 species of pasture plants. Oxalate content was found to vary with stage of growth as well as with rainfall and probably other factors. Seventeen of the species examined contained high levels of total oxalate (4·0% or more on a moisture-free basis), and evidence was presented on the toxicity, especially to hungry or travelling stock, of 4 of these species (*Portulaca oleracea, Salsola kali, Trianthema portulacastrum,* and *Threlkeldia proceriflora*). The authors discussed literature on the effects of ingestion of oxalate, and the toxicity of various levels of oxalate for sheep and cattle.—R. I. SOMMERVILLE.

HOBACK, W. W. & GREEN, T. W. (1953). **Treatment of snake venom poisoning with cortisone and corticotropin.**—*J. Amer. med. Ass.* **152**, 236-237. [Authors' summary copied *verbatim.*] 3467

Three cases of snake bite venom poisoning in which cortisone or corticotropin therapy was used, with pronounced decrease in morbidity, are reported. Cortisone and corticotropin are valuable adjuvants in the treatment of this type of poisoning.

I. LEMMON, G. B., JR. & PIERCE, W. F. (1952). **Intoxication due to chlordane. Report of a case.**—*J. Amer. med. Ass.* **149**, 1314-1316. [Authors' summary modified.] 3468

II. LENSKY, P. & EVANS, H. L. (1952). **Human poisoning by chlordane. Report of a case.**—*Ibid.* 1394-1395. [Abst. from authors' summary.] 3469

I. The authors described toxic manifestations in an adult woman after inhalation of chlordane used in an insecticide spray. There was involvement of the lung and liver consistent with chlordane intoxication demonstrated in animals and a haematological reaction similar to that reported from exposure to dichlorodiphenyltrichoroethane. The possibility of special susceptibility in this patient to chlordane poisoning was discussed, as well as the possibility of other factors.

II. A clinical account of poisoning due to the insecticide, chlordane, in a human being. The need for adequate investigation and dissemination of information concerning the dangers of insecticides to man was emphasized.

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

WALKER, R. V. L., GWATKIN, R. & MCKERCHER, P. D. (1953). **Efficiency of a quaternary ammonium-glycol mixture against Newcastle disease virus and *Salmonella pullorum*.**—*Canad. J. comp. Med.* **17**, 225-227. 3470

Newcastle disease virus was inactivated after 5 minutes' contact with an unnamed quaternary ammonium-glycol aerosol. *S. pullorum* remained viable after 120 min. under similar conditions.—THOMAS MOORE.

GORET, P., JOUBERT, L. & CLAVEL, P. (1952). Technique de contrôle rapide d'un traitement par les antibiotiques en médecine vétérinaire. **[Rapid control of treatment with antibiotics in veterinary medicine.]**—*Bull. Acad. vét. Fr.* **25**, 307-330. 3471

The authors described a rapid method for assessing the sensitivity to antibiotics of aerobic bacteria isolated from specific cases of disease in the field, and also a method for titrating the concentration of antibiotic in the serum after its administration. A laboratory employing the two methods could advise a field veterinarian on the suitability of antibiotic treatment, and at the same time calculate from their data the dosage and route of administration which would provide a curative level of antibiotic in the serum.

—G. V. LAUGIER.

MAGRANE, W. G., SCHLINGMAN, A. S. & MANNING, M. C. (1953). **The clinical use of chloromycetin in canine ocular infections.**—*N. Amer. Vet.* **34**, 39-43. 3472

Chloramphenicol alone orally, and locally before and after surgical treatment, appeared to

give complete protection from sepsis in 26 surgical cases, for the relief of glaucoma, hypopyon, cataract etc. Results were less favourable without other therapeutic measures, in cases of ocular infections, *e.g.* keratitis, conjunctivitis and iritis, especially of the more chronic types. When applied in the form of ointment up to 10% three times daily, or at a dosage of 250 mg. orally thrice daily, the drug proved non-toxic, with no allergic reactions in 87 cases.

—B. G. CLARKE.

BOGUE, J. Y. & CARRINGTON, H. C. (1953). **The evaluation of "mysoline"—a new anticonvulsant drug.**—*Brit. J. Pharmacol.* **8,** 230-236. [Authors' summary modified.] 3473

The anticonvulsant action of mysoline, [5-ethyl-5-phenylhexahydropyrimidine-4: 6-dione], against electric shock and leptazol seizures in rats was demonstrated and compared with those of phenobarbitone, 5:5-diphenylhydantoin, methoin (mesantoin), troxidone (tridione), and phenylacetylurea (phenurone).

A single oral dose of 5 mg./kg. of mysoline was sufficient to abolish the tonic extensor component of the electrically induced seizure in over 60% of rats, while a single dose of 20 mg./kg. of mysoline prevented maximal leptazol seizures in over 50% of rats. This compares favourably with other anticonvulsant drugs.

Mysoline was shown to have a remarkably low toxicity, both acute and chronic, in animals whether expressed in terms of the LD_{50} or as the dose required to produce neurological symptoms or morphological change.

BECKER, E. (1953). Knochenbrüche und ihre Versorgung. Zu dem gleichnamigen Lehrfilm. **[Treatment of fractures. (Instructional film).]**—*Tierärztl. Umsch.* **8,** 202-203. 3474

B. described an instructional film which deals with the handling of fractures in horses, then with the treatment of fractures in man by Hoffmann's bone traction technique with screws, clamps and connecting rod, and finally with the application of this technique to fractures of the extremities in dogs. Besides the prevention of torsion and displacement of the fragments, the omission of plaster of Paris results in the skin remaining healthy and the limb can be used soon after operation.—A. ACKROYD.

See also absts. **3260** (quaternaries and hypochlorites); **3282** (action of streptomycin on *Bact. coli*); **3303-3304** (antibiotics and fatal fungus infections); **3312** (antrycide); **3314** (purine derivatives); **3315** (achromycin); **3316** (dourine); **3321** (atebrin); **3322** (sulphaquinoxaline); **3323-3324** (*Pl. gallinaceum* infection); **3327** (nitrophenide); **3328** (phenyl-hydrazine); **3347** (potassium iodide in equine encephalomyelitis); **3418** (anthelmintics); **3422** (phenothiazine); **3434** (terramycin for dairy calves); **3445** (antibiotics); **3528** (book, antibiotics); **3529** (book, sulphonamides and antibiotics); **3530** (book, cortisone and A.C.T.H.).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

MARSTON, H. R. (1950). **Energy transactions in homeothermic animals.**—*J. roy. Soc. N. S. W.* **84,** 169-183. 3475

M. recalled the main phenomena associated with heat production in homeothermic animals. The Surface Law (basal metabolic rate proportional to body surface), in so far as it suggests a causal relationship between the physical surface of an animal and its basal rate of heat production, is untenable, but basal metabolism does vary exponentially with body weight. Attention was drawn to the high rate of heat production in the visceral organs and to the significance of the heat increment fraction. Evidence was presented that the heat increment is a constant proportion of the available energy intake, and the linear relationship between the intake of available energy and total heat production is extrapolated to obtain an estimate of the "true basal energy requirement".

Glycolysis and the reactions of the Krebs cycle were considered in relation to the efficiency of the reactions in terms of resonance energy. The present state of our knowledge of the mechanism which poises the basal rate of heat production, particularly in relation to the suggestion that such a mechanism might operate by influencing the rate of protein turnover, was discussed. Among the animals considered were mice, rats, rabbits, dogs, elephants, horses and cattle.—R. L. REID.

HOLMGREN, H., MOLLERSTRÖM, J. & SWENSSON, A. [Edited by.] (1953). Verhandlungen der dritten Konferenz der Internationalen Gesellschaft für Biologische Rhythmusforschung, 30 Sept. und 1st Oct. 1949, Hamburg. **[Conference of the International Society for the Study of Biological Rhythms.]** —*Acta med. scand.* Suppl. 278. pp. 146. 3476

This supplement contains 30 papers presented to the 3rd International Conference for Research on Biological Rhythms, held in Hamburg. A number of papers deal with diurnal variations, such as those involving liver glycogen, serum bilirubin, gastric acidity and erythropoiesis. Others deal with rhythms in living organisms which may be associated with the lunar cycle or with sunspots. There are also

contributions on rhythmic changes in endocrine glands and tumours, and on the decreasing weight of successive eggs in any given clutch laid by the domestic fowl. All the papers except one are in German.—E. G. WHITE.

HARDY, J. D. & DRABKIN, D. L. (1952). **Measurement of body water. Technique and practical implications.**—*J. Amer. med. Ass.* **149**, 1113-1116. [Authors' summary modified.] 3477

The authors outlined the several types of measurements that may be employed for the determination of total body water. The use of dilution methods has made available valuable information concerning the relation of body fluid compartments to body fat and to each other. Deuterium oxide (heavy water) appears to be an excellent tracer substance for water, and its availability has made possible a more critical examination of rates of water turnover in the body and rates of transfer of water across various cell membranes. It is reasonable to anticipate that our knowledge of body fluid compartments and of water kinetics in the human body will be enormously extended by the use of isotopes.

PEETERS, G. & MASSART, L., (1953). Physiologische en biochemische aspecten van het vraagstuk der electrolieten en hun verdeling over het organisme. [**Electrolytes and their distribution in the organism.**]—*Vlaam. Diergeneesk. Tijdschr.* **22**, 117-138. 3478

A discussion on the literature.

—C. A. VAN DORSSEN.

ANDERSON, L. L., WILLCOX, M. L., SILLIMAN, J. & BLOUNT, S. G., JR. (1953). **The pulmonary physiology of normal individuals living at an altitude of one mile. [Human].**—*J. clin. Invest.* **32**, 490-496. 3479

The authors studied pulmonary function in normal acclimatized individuals living at altitudes between 5000 and 8000 feet, comparing the values obtained with others from individuals living near sea level. Their experiments were designed to measure the pulse rate and oxygen consumption during forced heavy breathing after rest ("maximum voluntary minute ventilation"), during rest, and in the course of moderate exercise. A further experiment was devised to measure the tensions of oxygen and carbon dioxide in blood from the brachial artery and to relate these values to the levels of these gases in the expired air, samples being taken simultaneously during rest and exercise. The individuals from high altitudes breathed more heavily while at rest, and in consequence, the level of carbon dioxide in their peripheral arterial blood was significantly lower than that in individuals living at sea level.—A.S.

YOUNG, J. Z. (1952). **Growth and plasticity in the nervous system.**—*Proc. R. Soc.* Ser. B. **139**, 18-37. 3480

A discussion on processes of learning and of form discrimination, including a comparison of relevant parts of the nervous system of cephalopods and mammals.—R. N. SMITH.

GELBKE, H. & HERZOG, W. (1951). Beitrag zur experimentellen heterotopen Knochenbildung in der Muskulatur beim Hund. [**Experimental heterotopic bone formation in dogs.**]—*Z. allg. Path. path. Anat.* **87**, 167-173. 3481

Seven months after the insertion of pegs into the femoral region of dogs, histological examination revealed the presence of bone formation in the surrounding muscle. This tissue was completely divorced from the bone of the normal skeleton. The authors discussed the significance of these findings.

—C. W. OTTAWAY.

MIALHE-VOLOSS, C. (1952). Action mélanophoro-dilatatrice des lobes antérieur et postérieur d'hypophyses de rat et de boeuf. [**The melanophore-dilatating action of the anterior and posterior lobes of the rat and ox pituitary.**]—*C. R. Acad. Sci., Paris.* **235**, 211-213. 3482

A principle has been extracted from the pituitaries of the ox and rat which acts on the melanophores of the web of the frog's foot. The posterior lobe produces a much greater quantity than the anterior.—R. N. SMITH.

MIALHE-VOLOSS, C. (1952). Action corticotrope des lobes antérieur et postérieur de l'hypophyse du boeuf. [**Corticotrophic action of the anterior and posterior lobes of the ox pituitary.**]—*C. R. Acad. Sci., Paris.* **235**, 743-745. 3483

Greater amounts of intermedine and of adrenocorticotrophic hormone are demonstrable in hypophysectomized rats injected with extracts of posterior pituitary gland than in similar rats injected with extracts of anterior pituitary gland.—R. MARSHALL.

THORPE, B. (1953). **The hump of a zebu.**—*Aust. vet. J.* **29**, 79-81. 3484

An account of the dissection of the hump of a Gujerat type zebu cow. The hump was found to consist of a very much enlarged M. rhomboideus cervicis.—K. G. JOHNSTON.

STRICKLAND, K. P. (1952). **Nucleic acids and other protein-bound phosphorus compounds of cat brain. Incorporation of P32 after an**

intracisternal injection.—*Canad. J. med. Sci.* **30,** 484-493. 3485

Determination of relative specific activities showed that incorporation of P_{32} was most rapid into the acid-soluble phosphorus of the cat's brain, followed in descending order by "phosphoprotein", "diphosphoinositide", pentosenucleic acid, acid-insoluble residue, phospholipoid and desoxypentosenucleic acid.

—THOMAS MOORE.

CENA, M., CZYSZEK, W. & SŁOMKA, J. (1952). Badania nad wpływem umaszczenia koni na pochłanianie promieniowania słonecznego. **[Influence of colour on absorption of sun rays in horses.]**—*Méd. vét., Varsovie.* **8,** 261-264. 3486

The absorption of sun rays and its rate are greatest in bays and chestnuts, and practically negligible in greys. The colour of the coat has an influence on the usefulness of the animal. The authors quoted some statistics from the Derby, the Oaks and the St. Leger races where winners are headed by bays and chestnuts, with very few greys. The alkaline reserves in the blood also appear to be higher in dark coloured horses.—J. R. MITCHELL.

See also absts. **3515** (use of cyanol in the study of blood-vessels in sheep skin); **3531** (book, physiology of milk secretion); **3532** (book, coagulation of blood); **3533** (book, anatomy); **3534** (book, physiology).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

ANON. (1953). **Health department workers and their associations.** — *Med. Offr.* **90,** 116-120. 3487

Gives details of nine organizations in Britain that are covered by this title.

I. RITCHIE. (1953). Organisation des services vétérinaires en Grande-Bretagne. **[The veterinary services in Gt. Britain.]**—*Bull. Off. int. Epiz.* **40,** May. pp. 412-419. 3488

II. HEYWOOD. (1953). L'organisation des services vétérinaires d'Australie. **[The veterinary services in Australia.]** — *Ibid.* pp. 430-453. 3489

III. COLOMO & TALAVERA. (1953). Organisation des services vétérinaires en Espagne. **[The veterinary services in Spain.]**—*Ibid.* pp. 420-429. 3490

I. The number of veterinary surgeons in Gt. Britain in September, 1952 was 5,428, of whom 930 were employed in a full-time capacity, either by the state or by a local authority.

R. gave an account of the field staff of the state service and discussed its relationship to the practitioners. He gave a list of research centres, both government and institutional, which are open to veterinary graduates.

II. A general history of the veterinary profession in Australia from 1880 when the first veterinary surgeon, Dr. Kendall, who played an important part in founding the first veterinary school and creating the state veterinary service, arrived there.

H. described the functions and activities of the present day veterinary profession and gave an account of the two schools, the one in the University of Sydney and the second in the University of Queensland.

III. The veterinary services in Spain are all under an official organization—the Direction of Breeding, formed by the Ministry of Agriculture under the law of 1931. The chief of this is a veterinary surgeon and the heads of all the departments within the organization are also veterinarians.

The organization consists of a central service, provincial breeding services, an inspectorate of frontiers and ports, regional laboratories, breeding and animal selection centres and the municipal veterinary services.

—D. S. RABAGLIATI.

ANON. (1948). L'Institut Pasteur de Lille. Historique. **[History of the Pasteur Institute, Lille.]**—*Ann. Inst. Pasteur, Lille.* **1,** 13-102. 3491

This is an historical account of the Pasteur Institute, Lille, from its foundation in 1894 with Calmette as its first Director. Photographs are included, showing the buildings, laboratories and accommodation for large and small animals. Included also is a complete list of the publications from 1896 onwards that have emanated from the Institute.

MAURER, R. (1952). Zur Geschichte des ehemaligen Veterinär-Instituts zu Würzburg. **[History of the former veterinary institute at Würzburg.]**—*Inaug. Diss., Munich.* pp. 77. 3492

Founded in 1791 the Veterinary Institute, Würzburg, trained veterinary surgeons until 1820; from 1820-69 the course was taken over by the Central Veterinary College in Munich

and the Institute functioned as a farriery school attached to the University of Würzburg; from 1869 to date the farriery school has had independent status. Short biographies of Halberstädter and subsequent directors were appended.
—K. J. SINCLAIR.

See also absts. **3287** (*Brucella* infection of milk); **3402** (pasteurization and Q fever); **3427** (viability of ascaris eggs in sewage); **3518** (report. Ministry of Health. Gt. Britain); **3525** (book, advances in veterinary science).

LIVESTOCK HYGIENE

SUMMER, W. (1953). **Ultra-violet deodorization of air.**—*J. R. sanit. Inst.* **73**, 583-592. Discussion p. 593. [Author's summary copied *verbatim.*] **3493**

Odours can either be masked or destroyed. Only destruction is really effective. Destruction is achieved by changing the molecular structure of the obnoxious substance, or its vapours, so that new chemical structures are formed which do not contain osmophoric radicals, and thus cannot act as a stimulant of the sense of smell.

Oxidation is the most effective means of altering the chemical structure of a substance, and of all oxidants, nascent oxygen and ozone are the most powerful. The physical method of generating nascent oxygen and ozone from the oxygen in the air by irradiating the latter with ultra-violet energy of certain well-defined wave lengths is the only method possessing acceptable technical and economical features.

ANON. (1953). **[Land improvement as a factor in the control of animal diseases.]**—*Veterinariya, Moscow.* **30**, No. 4. pp. 3-5. [In Russian.] **3494**

A general note stating that agricultural efficiency and efficiency in the raising of livestock with control of animal diseases in Russia require to be completely reorganized. The line recommended to be taken is the development of factors in environment favourable to stock and adverse to infective agents and insect vectors. This will necessitate attention to a variety of basic matters such as the drainage of marshes, the irrigation of regions with a low rainfall, suitable crop rotation using appropriate seed material, conversion of scrub areas into leys and also the provision of suitable farm buildings on the scale required.—F.A.A.

REPRODUCTION AND REPRODUCTIVE DISORDERS

MANN, T. & WALTON, A. (1953). **The effect of under-feeding on the genital functions of a bull.**—*J. agric. Sci.* **43**, 343-347. [Authors' summary copied *verbatim.*] **3495**

A study was made of the effect of under-feeding on the genital functions in the bull. Regular weekly collections of semen were made during (1) a 5-week pre-experimental period of normal feeding, (2) a 23-week experimental period of under-feeding, and (3) a 25-week post-experimental period of recovery. Although the food intake was reduced to such an extent that the bull began to lose weight at a rate of 6·5 kg. (1 stone) per week, the volume and density of semen and the motility and morphology of the spermatozoa were not significantly changed.

In contrast to the testes, the secretory function of the male accessory glands was markedly affected by under-feeding. The concentration of fructose and citric acid in semen decreased to about 30 and 60% respectively of the original levels. During the recovery period the values for fructose and citric acid gradually returned to normal.

CAMPBELL, R. C. (1953). **The effect of semen age on conception rate.**—*J. agric. Sci.* **43**, 256-259. [Author's summary modified.] **3496**

The relationship of the age of semen to conception rate (C.R.) was studied at two artificial-insemination centres and a subcentre of one of these. Data relating to 50,213 first inseminations were included in the analysis. It was shown that external conditions can affect the rate of decrease of C.R. with age of semen.

Records giving C.R. for each day of semen age may reveal centre differences that cannot be detected in records giving mean C.R. only. Information may be lost if data are grouped by months rather than recorded by collections. The rate of decrease should not be used for comparing centres until the various factors affecting it (*e.g.* breed differences) are more fully understood. Further investigations should not be limited to one centre.

BONADONNA, T. & OLGIATI, L. (1953). Dell'identificazione dei nemaspermi di " Bos taurus " vivi e morti con la colorazione bleu bromo-fenolo e nigrosina. **[Differentiation between living and dead bovine spermatozoa by staining with bromophenol blue and nigrosin.]**—*Zootec. e Vet.* **8**, 195-199. **3497**

The substitution of brom-phenol blue for

eosin in Blom's method of staining by eosin and nigrosin was stated to give more uniform results in the differentiation between live and dead spermatozoa.—I. W. JENNINGS.

DUNN, H. O., BRATTON, R. W. & HENDERSON, C. R. (1953). **Fertility of bovine spermatozoa in buffered whole egg extenders containing penicillin, streptomycin, sulfonamides and added glucose.**—*J. Dairy Sci.* **36**, 524-529. [Authors' summary modified.] **3498**

An account of three experiments, using the split sample technique for comparing the fertility of bovine semen diluted with 2·9% citrate-sulphanilamide-yolk, 2·9% citrate-succinylsulphathiazole-whole egg and 2·3% citrate-sulphanilamide-whole egg-glucose. Each diluent contained 500 units each of penicillin and streptomycin. The average 60- to 90-day percentages of non-returns to a total of approx. 5,000 first services per treatment was 71·5 for the yolk diluents containing antibiotics and 69·4 for the whole egg diluents containing antibiotics. It was concluded that penicillin and streptomycin together have a similar effect on fertility whether they are added to the yolk or the whole egg diluent.

FRITSCH, W. (1952). Untersuchungen über die Wirkung von Hyaluronidasezusätzen auf das verdünnte Bullensperma im Reagenzglas. **[Action of hyaluronidase on diluted bull semen** *in vitro*.**]**—*Inaug. Diss., Hanover.* pp. 28. **3499**

Hyaluronidase in concentrations of 1 : 500 to 1 : 128,000 increased the activity and longevity of spermatozoa in diluted bull semen *in vitro*, this effect being more marked at the lower concentrations.—F. R. HARRIS.

SCHERMER, S. & OTTE, E. (1953). Blutgruppen bei Pferd und Rind und ihre Bedeutung für den Nachweis der Abstammung und der Vaterschaft. **[Blood groups in horses and cattle and their significance in the determination of descent and paternity.]**—*Fortpfl. Bes. Haustiere.* **3**, 49-52. [English summary.] **3500**

The authors established the presence of six groups in blood from 1,000 horses and seven groups in blood from 438 cattle. Agglutinating antibodies of bovine serum rapidly lose their activity in stored samples. The authors found that freeze-drying of bovine serum preserved the activity of antibodies for more than 12 months. The determination of paternity by means of blood groups was mentioned, but not described.
—R.M.

KIDDER, H. E., BARRETT, G. R. & CASIDA, L. E. (1952). **A study of ovulations in six families of Holstein-Friesians.** — *J. Dairy Sci.* **35**, 436-444. **3501**

Data obtained by frequent rectal examinations over a 4 year period were presented. The experimental herd consisted of animals from 15 months old to the second calving date and information included 157 pregnancies. Multiple ovulations tended to follow in sequence but they were of low fertility for while their incidence was 13·10%, the incidence of twinning was only 1·92%. Multiple ovulations were more frequent in May and low in September, but factors such as age, family or time after parturition had no effect.

Silent heat periods were less frequent in the 61-308 day period *post partum* than in the first 60 days, but even so their incidence of 11·0% is high enough to form a problem for the breeder.

There was no difference in fertility between the ova from different ovaries though 56·5% were derived from the right ovary and 54·5% pregnancies were on the right side. Ovulations appeared to be haphazard from the ovaries.
—K. G. TOWERS.

WATSON, R. H. (1953). **Studies on seasonal variation in the level of fertility in Merino ewes. I. Observations on mating, pregnancy, and lambing at intervals of four months.**—*Aust. J. agric. Res.* **4**, 349-359. [Author's summary copied *verbatim*.] **3502**

A flock of Merino ewes was divided at random into three groups which were mated to the one lot of Merino rams for periods of two months at intervals of four months. The mating periods were April to June, August to October, and December to February. Observations were made on the occurrence and distribution of mating throughout each mating period, on attainment of advanced pregnancy, and on lambs born.

There was a high incidence of mating from the start of the first and second mating periods, but a high incidence of mating did not occur until the third week of the third period. Most of the ewes mated on one occasion only during the first and third periods and most of them eventually lambed. Many ewes returned to service on one or two occasions during the second period and many failed to bear lambs.

A high proportion of the pregnancies from the first mating period and a moderate proportion of those from the second were multiple, but all pregnacies from the third mating period were single.

As measured by the ratio of lambs born

alive to ewes mated, the first mating was accompanied by the highest level of fertility and the second by the lowest.

BRADEN, A. W. H. & AUSTIN, C. R. (1953). **Fertilization and fertility in mammals.**—*Aust. vet. J.* **29**, 129-132. 3503

The main events which occur between mating and the first segmentation of the fertilized egg were discussed. The number of spermatozoa ejaculated lies between 100 and 10,000 million varying with the species. The passage of spermatozoa to the site of fertilization at the ovarian end of the fallopian tube is rapid (less than 15 min. after mating in the rat, bitch, ewe and cow). After insemination the numbers of spermatozoa which reach the site of fertilization are about 30 to 40 in the rat and about 200 in the rabbit and ferret.

Penetration of the cumulus of the egg by individual spermatozoa appears to be assisted by hyaluronidase without complete denudation of the egg. Before the spermatozoon can penetrate the zona pellucida it must remain in the female tract for some hours and apparently undergo some physiological change or " capacitation ".

The cytological changes leading to the production of the male and female pronuclei were also briefly described.

—A. W. BLACKSHAW.

AUSTIN, C. R. & BRADEN, A. W. H. (1953). **Polyspermy in mammals.** [Correspondence.] —*Nature, Lond.* **172**, 82-83. 3504

The authors stated that the incidence of polyspermy (the penetration of more than one spermatozoon into the vitellus at fertilization) in rats and rabbits increased greatly when mating was delayed until after ovulation.

—E. A. GIBSON.

AUSTIN, C. R. & BRADEN, A. W. H. (1953). **The distribution of nucleic acids in rat eggs in fertilization and early segmentation. I. Studies on living eggs by ultraviolet microscopy.**—*Aust. J. biol. Sci.* **6**, 324-333. 3505

Living rat eggs were pressed under coverslips and photographed (a) in phase contrast, (b) in ultra-violet light at 260 mμ. Absorption at 260 mμ, with suitable checks, indicated the presence of nucleic acids in high concentrations around the nucleolus of the oocyte, in the sperm head after penetration of the egg, in the nucleoplasm of early pronuclei, and around the nucleoli of segmenting eggs. The moderate concentration of nucleic acid in the cytoplasm of the oocyte decreased during early cleavage. These findings were discussed in the light of current views on the relation of nucleic acids to growth, differentiation and protein synthesis.

—M. H. HARDY.

BIGGERS, J. D. & CLARINGBOLD, P. J. (1953). **The influence of thyroid function on the Allen-Doisy dose response line obtained by the administration of oestrone and oestradiol-3, 17β in mice.**—*Aust. J. biol. Sci.* **6**, 305-323. [Authors' summary modified.] 3506

Hypothyroidism significantly increased the slope of the dose response line obtained by the subcutaneous and intravaginal administration of oestrone and concomitantly decreased the minimum effective dose. Hyperthyroidism had the opposite effect. Hyperthyroidism, however, had no influence on the dose response line obtained by the intravaginal administration of oestradiol-3, 17β.

The slope of the dose response line for oestradiol-3, 17β was significantly lower than the slope for oestrone.

The authors discussed the significance of these results for an understanding of the mode of action of oestrogens.

MCDONALD, L. E., NICHOLS, R. E. & MCNUTT, S. H. (1953). **Replacement therapy with a slowly absorbed progesterone product.**—*Amer. J. vet. Res.* **14**, 385-387. [Authors' summary modified.] 3507

Three cows maintained early pregnancies after ablation of the corpus luteum when aqueous solutions containing 500 mg. of microcrystalline progesterone were administered once every 10 days. One of 2 cows maintained early pregnancy after ablation of the corpus luteum when aqueous solutions containing 500 mg. of microcrystalline progesterone were administered once every 13 days. The foetus was resorbed in the remaining cow. "Repositol" progesterone appears to be a slowly absorbed form of progesterone, requiring less frequent and lower total dosage than is possible when an oily vehicle is used.

SLIZYNSKA, H. & SLIZYNSKI, B. M. (1953). **Cytological studies of sterile bulls with spermhead abnormality.**—*J. agric. Sci.* **43**, 253-255. [Authors' summary copied *verbatim.*] 3508

Cytological studies did not show any detectable structural changes which could be related to the spermhead deformity in a series of sterile bulls described by Hancock. The deformity according to Hancock consists of a deeply stained (in iron haematoxylin) area placed askew at the apex of the spermhead.

In spermateleosis it is connected with persistence of the shallow apical groove of the

nuclear membrane observed only in earlier stages of development in normal cases. There is also a formation of vacuoles in the developing spermheads in the region of the apex and of the equatorial belt. The apex of the abnormal spermhead treated with Feulgen reagent appears to be cut off askew.

Formation of vacuoles in the developing spermheads may be related to some unknown changes in the nucleic acid metabolism of the spermhead. The absence of any chromosomal aberration, whether of quantitative or structural nature, may lead to the conclusion that the changes observed are due to a gene mutation.

OLOUFA, M. M., BOGART, R. & MCKENZIE, F. F. (1951). **Effect of environmental temperature and the thyroid gland on fertility in the male rabbit.**—*Tech. Bull. Ore. agric. Exp. Sta.* No. 20. pp. 39. 3509

The effect of environmental temperature and the thyroid gland on fertility was studied in two series of experiments using 15 and 24 mature male rabbits respectively. In the first series, using 5 groups of 3 rabbits, group I, maintained at room temperatures from 55–65°F., served as control. Groups II and III were kept at 90–92°F., but the latter was given thyroprotein amounting to 0·01% of the total ration. Groups IV and V were kept for 12 hours daily at room temperatures and the remaining 12 hours at 90–92°F., but the latter group was fed thyroprotein as in group III.

In the second series, using 6 groups of 4 rabbits, five of the groups received treatment like the corresponding groups in the first series. The sixth group, kept at room temperature, received thiouracil. All groups were exposed to electric light for 12 hours daily.

Semen was collected and examined at intervals of 7 and 10 days respectively and body weight was checked. High temperatures of 90–92°F. had an adverse effect on semen volume, motility, concentration and percentage of live and normal spermatozoa. The effect of continuous high temperature was more marked than that of intermittent high and low temperatures. Continuous high temperature plus thyroprotein had a still more marked adverse effect. Respiration rate was increased, while food consumption, body weight and weight of testes were reduced. Rabbits exposed to intermittent temperature and given thyroprotein yielded more and better quality semen than those exposed to intermittent high and low temperatures without thyroprotein. In rabbits kept at room temperature and given thiouracil there was a decrease in semen volume and quality; respiration rate was normal, and there was an increase in body weight, the weight of the testes being unaffected.

There are 13 photomicrographs, a review of the literature and a list of 40 references.

—E.G.

See also absts. 3286 (brucellosis in bulls used for artificial insemination); 3446 (hormone studies in normal and toxaemic pregnancy); 3535 (book, genes and mutations).

ZOOTECHNY

HUTCHINSON, J. C. D. & SYKES, A. H. (1953). **Physiological acclimatization of fowls to a hot humid environment.**—*J. agric. Sci.* 43, 294-322. [Authors' summary modified.] 3510

The authors described methods for the study of the effect of acclimatization on heat tolerance of fowls in extreme climates. Changes in live weight, food intake and rate of lay under the experimental regime were recorded. It was deduced that the birds could be maintained in reasonable health and production under these experimental conditions. A uniformity test showed that the method of assessing heat tolerance gave repeatable results.

ROARK, D. B., BECK, G. H. & FRYER, H. C. (1952). **Differences in milking response under prescribed variations in methods employed to stimulate milk let-down.**—*J. Dairy Sci.* 35, 1017-1025. 3511

The authors stated that udder massage combined with fore-milking was more effective in stimulating milk let-down than either massage alone or fore-milking alone. Other factors were also discussed.—E. A. GIBSON.

TECHNIQUE AND APPARATUS

COWAN, S. T. (1953). **Rapid micromethods for bacteriology.**—*Lab. Pract.* 2, 241-244. 3512

C. described methods for obtaining a result in under 24 hours in the identification of bacteria by biochemical tests. Details were given for sugar fermentations, urease, catalase, methylene blue and nitrate reductions, indole and hydrogen sulphide production, gelatin and

starch hydrolysis, citrate utilization and the methyl red and Vosges Proskauer tests.
—A. SEAMAN.

PIZARRO, C. A. (1953). Comportamiento de algunas cepas microbianas frente a la prueba del tiempo de reductasa. **[Application of the reductase test to various bacteria.]**—*Rev. Soc. Med. vet. Santiago.* **4**, No. 6. pp. 1-3. 3513

Various bacteria were cultured first in lactose broth and then in milk before being inoculated into sterile milk for the reductase test. The reducing capacity of the bacteria was generally in inverse proportion to the readiness with which they could be cultured in milk.
—A.S.

VAN DRIMMELEN, G. C. (1953). **Supravital staining as a method of testing the viability of bacteria in suspensions.**—*S. Afr. J. Sci.* **49**, 255-260. 3514

Counting bacteria in suspensions by means of opacity standards and the Breed clump count have the disadvantage that both living and dead bacteria are counted. D described an alternative method, of supravital staining, using a tetrazolium salt (2–3–5 triphenyltetrazolium bromide), by means of which the number of live organisms in *Br. abortus* Strain 19 vaccine could be assessed rapidly and accurately.—R.M.

RYDER, M. L. (1953). **Use of cyanol in the study of blood-vessels in sheep skin.** [Correspondence.]—*Nature, Lond.* **172**, 125. 3515

Double staining of tissues with cyanol and safranin gave good details of cell-walls of dermal connective tissue, melanin-containing cells, and full or empty blood vessels. Applied to sheep skin it revealed melanin cells in the dermis, around the vessels, in the epidermis, around the sebaceous glands, and in the follicle sheaths.—F. R. HARRIS.

FELDMAN, D. (1952). **Flow regulator for intravenously administered fluids.**—*J. Amer. med. Ass.* **149**, 1017-1018. [Author's summary modified.] 3516

F. described a tubing clamp designed for easy regulation of slow infusion rates of parenterally administered fluids. This is accomplished by a simple lever arrangement permitting very gradual compression of the tubing through which the fluid flows.

REPORTS

GREAT BRITAIN. (1953). **London School of Hygiene and Tropical Medicine. Report of the work of the School for the year 1951-52.** pp. 119. London: The School. 3517

During 1951-52 work of veterinary interest was carried out in the departments of bacteriology, biochemistry, entomology, and parsitology. Examination of strains of *Brucella* continued. The use of the Coombs test for incomplete antibodies in the diagnosis of human BRUCELLOSIS was being investigated. Search continued for new antibiotics from *Penicillium, Aspergillus* and other fungi. The study of FILARIASIS in cotton rats was continued with experiments on repeated re-infestation. A new strain of *Paramphistomum* from Sardinia was used to establish infestation in sheep. The efficiency of trypanocidal drugs against *T. rhodesiense,* and drug resistance of *T. rhodesiense* and *T. gambiense* were studied. A survey of the distribution of *Ornithodoros moubata* was made, and the action of parasiticides on this tick was investigated. Blood slides and helminthological material from animals at the Zoological Gardens were regularly examined.
—R.M.

GREAT BRITAIN. (1953). **Report of the Ministry of Health covering the period from 1st April 1950 to 31st December, 1951. Part III. On the state of the public health, being annual report of the Chief Medical Officer for the year 1951.** [CHARLES, J. A.] pp. 222. London: H.M. Stat. Off. 6s. 6d. 3518

The two items of veterinary interest in this report are FOOD POISONING and HYDATID DISEASE (*Echinococcus* infestation). Out of 233 reported outbreaks of FOOD POISONING, one was caused by *Clostridium welchii* in fresh meat, 14 by *Salmonella typhi-murium* in eggs (duck eggs in 10 cases), 3 by salmonella in milk and one by staphylococci in milk. HYDATID DISEASE was described as uncommon in Great Britain. An intracutaneous skin test and the complement-fixation test were found to be reliable means of diagnosis in man.—R.M.

SOUTHERN RHODESIA. (1953). **Report of the Director of Veterinary Services for the year ending 30th September, 1952.** [ADAMSON, J. S.] pp. 30. Bulawayo: Govt. Printer. 3519

There were two outbreaks of ANTHRAX with 16 deaths. Of 3,578 cattle tuberculin tested 1·28% were infected. Examination of 148,074

carcasses at the main abattoirs revealed only 24 with generalized TB. There is very little progress in the control of CONTAGIOUS ABORTION. In herd testing the percentage of reactors is very low; 5,907 cattle were given *Brucella* Strain 19 vaccine intradermally. BLACKLEG is endemic; 379 deaths were reported.

No EAST COAST FEVER has occurred for five years. There were 43 deaths from THEILERIASIS, 190 cases of PIROPLASMOSIS in bovine and 14 in equine animals were reported; cases of ANAPLASMOSIS occurred in all districts. Detailed reports on TRYPANOSOMIASIS were given. The disease has caused much anxiety as it has been spread into new areas. Antrycide is being used in treatment. Benzene hexachloride sprays to minimize attacks of blood-sucking flies have not had great success.

The 1951 outbreaks of F. & M. DISEASE carried on until November 1951. In 1952 there were outbreaks in three Reserves and on two estates; 102,843 cattle were inoculated, and all areas were declared free in August 1952. RABIES was confirmed in 312 cases. Practically all dogs have been vaccinated with Flury strain vaccine (180,610 dogs); of these, 30 have died of RABIES. The disease persists in border districts among non-vaccinated animals. In one area many jackals and honey badgers (*Mellivora capensis*) became infected. One jackal caused the deaths of 47 sheep. BOVINE MALIGNANT CATARRH appeared among a herd of Black Wildebeest (*Connochaetes gnu*) and was transmitted to cattle grazing in the area. RIFT VALLEY FEVER was confirmed in Umtali District. Over 100 deaths were reported from AFRICAN HORSESICKNESS. BLUETONGUE occurred among imported ewes; three died. Areas infected with CONTAGIOUS EPIDIDYMITIS and VAGINITIS decreased. There were 170 deaths from HEARTWATER.

The Report of the A.D.V.S. (Research), (Lawrence D.A.) gives details of the routine activities of the Veterinary Laboratory.

It was established that RIFT VALLEY FEVER virus is a cause of abortions in cattle.

—J. A. GRIFFITHS.

GRENADA. (1953). **Report of the Agricultural Department for the year 1949.** pp. 21. St. George's, Grenada: Govt. Printer. [Items of veterinary interest pp. 9 and 10.] 3520

There is no veterinary officer in Grenada. Vaccinations against SWINE FEVER were given by members of the agricultural staff. Infectious diseases suspected were MASTITIS, ANAPLASMOSIS, PIROPLASMOSIS and possibly CONTAGIOUS ABORTION.—J. A. GRIFFITHS.

BECHUANALAND PROTECTORATE. (1952). **Annual report of the Veterinary Department for the year 1951.** [ROE, J. E. R.] pp. 19. 3521

Among 722,545 animals vaccinated against ANTHRAX only five deaths occurred. BLACKLEG is endemic and causes severe losses; 134,062 cattle were vaccinated. Three hundred and eighty animals were vaccinated against BOVINE CONTAGIOUS ABORTION. BOVINE BOTULISM is endemic and causes severe losses; 9,176 animals were inoculated. Mortality from CALF PARATYPHOID is very high; 6,683 calves were inoculated. Two hundred and fifty fowls were inoculated against FOWL TYPHOID.

TRYPANOSOMIASIS is widespread in Ngamiland and the Chobe district. *Glossina morsitans* is prevalent. Eight thousand three hundred and sixty-six cattle were treated with dimidium bromide. There were a few cases of ANAPLASMOSIS but no EAST COAST FEVER. Conditions are unfavourable for a policy of compulsory dipping.

Preventive measures against F. & M. DISEASE are still being enforced to maintain cordon fences, quarantine camps, etc. RABIES is endemic in the Northern Protectorate and the neighbouring territories. Avianized vaccine from the U.S.A. was used to inoculate 229 dogs. One dog inoculated in Sept. 1951 developed RABIES in Jan. 1952. Tie-up or muzzling orders are enforced for only 30 days after vaccination. A few deaths from AFRICAN HORSE SICKNESS were reported; 529 animals were immunized. HEARTWATER caused the deaths of 698 bovine animals, and of 5,561 sheep and goats when these animals were moved into an endemic area.

HELMINTH INFESTATION is a cause of severe losses among young stock. Facilities for the widespread marketing of hexachlorethane and phenothiazine with measures and instructions in the Bechuana language for dosing have been provided.—J. A. GRIFFITHS.

ZANZIBAR PROTECTORATE. (1953). **Annual report of the Department of Agriculture, 1951.** [BRIANT, A. K.] pp. 30. Zanzibar: Govt. Printer. 2s. 3522

There are two Veterinary Officers in the Department. A mobile unit under a V.O. examined 3,941 animals and 614 found infected with trypanosomes were treated with antrycide methyl sulphate, which has given good results in cattle. There is no change in the EAST COAST FEVER situation. Dipping is still practised reluctantly in three Pemba districts, but commercial dairy herds in Zanzibar are regularly dipped.

An attempt is being made to develop a

cattle industry to avoid the importation of beef cattle from the mainland. Much has yet to be done to provide suitable pastures.

—J. A. GRIFFITHS.

SWEDEN. (1953). Veterinärvård vid armén år 1951 av överfältveterinären. [**Report of the Army Veterinary Service, Sweden, 1951.**] pp. 18. Stockholm: Kung. Boktryckeriet. P. A. Norstedt & Söner. 3523

The statistical survey for 1951 is based upon 4,083 horses in the army stables including 565 remounts. The incidence of sickness was 6·6% for the total number and 5·2% for the remounts. Joint-affections formed about one quarter and wounds and contusions another quarter of the causes of disease. Other common diseases were hoof-affections, TENDINITIS and TENDOSYNOVITIS, LYMPHANGITIS, and various diseases of the skin. GRASS SICKNESS occurs annually in one of the three Swedish remount-depots; in 1951, 15 cases occurred and only 4 recovered. Of contagious diseases STRANGLES was widely distributed but had a mild course. *Trichophyton* infection occurred in many stables.

—G. WINQVIST.

U.S.A. (1952). **State of California Department of Agriculture. Thirty-third annual report, period ending December 31, 1952.**—*Bull. Calif. Dep. Agric.* **41,** 185-506. [Items of veterinary interest pp. 465-500.] 3524

Tuberculin testing of 752,153 cattle in the Co-operative TB. eradication scheme revealed 0·16% reactors. Most of these were in a few badly infected herds; 235 herds were still showing infection at the end of the year. Among 64,333 cattle tested outside the above scheme there were 0·4% reactors. Calves are vaccinated against BRUCELLOSIS at 6–12 months of age with *Brucella* Strain 19 vaccine. Practising Veterinary surgeons vaccinated 344,466 calves making a total of 1,320,000 vaccinated since the 2nd Jan. 1948. There is a voluntary scheme for the control of SWINE BRUCELLOSIS and if pigs pass two tests at an interval of 30 days they are certified free from the disease. Several new outbreaks of JOHNE'S DISEASE occurred.

VESICULAR EXANTHEMA OF SWINE occurs in garbage-fed pigs. There were 113 outbreaks.

BLUETONGUE of sheep was diagnosed for the first time in California. About 200 flocks were affected (approx. 325,000 sheep). SCRAPIE appeared among pure bred Suffolk sheep after the importation of Suffolk ewes from Canada.

There were 344 cases of EQUINE ENCEPHALITIS; most of these occurred during the warm weather. The prevalence of *Culex tarsalis* mosquitoes has a direct relation to the incidence of the disease.

Details were given of other causes of disease and also of the work of the Livestock and Poultry Laboratories at San Gabriel, Fresno and the Poultry Laboratories at Petaluma and Turlock.

The routine work of the Bureaux of Dairy Service, Meat Inspection, and Livestock Identification was also reviewed.—J. A. GRIFFITHS.

BOOK REVIEWS

BRANDLY, C. A. & JUNGHERR, E. L. (1953). **Advances in veterinary science. Vol. I.** pp. xi + 431. New York: Academic Press, Inc. London: Academic Books Ltd. $9.00. 3525

This volume is the first of a series marking an interesting development in veterinary literature.

The editors are assisted by an advisory board with a distinctly international flavour, and the intention is to furnish periodical reviews by competent authorities of progress in active fields of veterinary science.

Six topics are treated in the volume namely:— Animal diseases and human welfare; Virus diseases; Sulphonamides; Antibiotics; The infertility problem of cattle; Bovine mastitis; Swine diseases; Veterinary public health.

Meyer, K. F. deals with animal diseases and human welfare using broad generalizations rather than detailed factual knowledge. He starts with a statement which will not be generally accepted namely, that prehistoric man " tamed first the wild ox . . . then the donkey, the camel, the wolf, the boar, the horse, and the (*sic*) mule ". Surely it is more probable that man in the hunter stage which preceded his pastoral stage domesticated the wolf, to help him in his hunting, before he domesticated cattle?

After a brief account of some of the ways in which study of disease in animals has aided our understanding of human diseases, he passes to a consideration of the diseases of animals transmissible to and from man. For this group, he uses the term anthropozoonosis—one looks forward to the day when a more pleasing word will be invented. These diseases are dealt with under two heads, namely their public health significance, and their economic importance.

The contribution by Steele, J. H. entitled "Veterinary public health" covers much the same ground as that of Meyer, but in a more detailed and factual manner. Although this chapter is headed by Steele's name, footnotes indicate that the accounts of the various diseases have been prepared by a number of different authors, for example Wolff, A. H., and Steele, J. H. have been responsible for anthrax, Menges, R. W. for histoplasmosis, Reinhard, K. for leptospirosis, and so on.

Baker, J. A., and York, C. J., in a contribution of some 20 pages give an excellent account of modern methods for the study of virus diseases, and of recent developments in knowledge of virus diseases in each of the species of domestic mammals and, very briefly, birds.

A section of some 50 pages by Detweiler, D. K., and Scheidy, S. F., covers the pharmacology of the sulphonamides, gives accounts of a number of the newer compounds, and then deals with therapy in each of the species of domestic animals and poultry. The same two authors have also written a 30-page contribution on antibiotics. These two chapters will appeal particularly to the clinician as they provide exactly what he requires to know, in order to keep abreast of the rapidly increasing literature.

Bartlett, D. E., and Boyd, W. L., deal with infertility in cattle under subheads of nutrition, heredity, endocrines, idiopathic, infection and miscellaneous. Their very reasonable attitude to the nutritional factor is summed up as: "There is no present evidence that rations meeting usual minimum standards fail to supply adequately all demands for reproduction of both male and female. Marginal deficiencies have in no instance been convincingly related to reproductive failures".

Some fifty pages are devoted to mastitis, the author being Plastridge, W. N. This excellent account deals with the forms of mastitis caused by streptococcus, staphylococcus, and other types of organisms; the factors contributing to mastitis; diagnosis and control.

The contribution on Swine diseases by McNutt, S. H., is particularly interesting, since during recent years, there have been quite numerous developments in knowledge of a number of the diseases of pigs. Adequate summaries of work done in the U.S.A. are given. In discussing anaemia, it is stated that "Due to the efforts of the Kentucky research workers, Bruner *et al* (1948) it has been shown that ictero-anaemia of horse and mule foals is due to haemolysins in the milk of dams", but no mention is made of the very important contributions of the French workers, Bessis and Caroli, or of Coombs and his British colleagues. Dealing with swine erysipelas, McNutt discusses the difficulty of testing the efficiency of vaccines which arises because of the difficulty of infecting pigs experimentally with the causal organism. He does not mention the work of Doyle, T. M., on the interrelationship between swine fever and swine erysipelas. Doyle (1947) has shown that pigs which have been immunized against swine fever by means of crystal violet vaccine, and then challenged with live virus, become extremely susceptible to experimental infection with swine erysipelas. That work has been confirmed by Gledhill, A. W. (1953) and a satisfactory routine method of testing swine erysipelas vaccines has been developed, and is now in use in England.

The view attributed to Shope that swine fever is a disease which cannot be eradicated receives undue attention, since it is demonstrably erroneous, as proved by Australian and New Zealand experience of the disease.

The lists of references which follow each of the eight sections constitute an extremely useful feature of the book; these are excellent guides to the recent literature, particularly the American literature. Future volumes of this series will be awaited with great interest.—M.C.

REICHENOW, E. (1952). Doflein. Lehrbuch der Protozoenkunde. Eine Darstellung der Naturgeschichte der Protozoen mit besonderer Berücksichtigung der parasitischen und pathogenen Formen. II. Spezielle Naturgeschichte der Protozoen. Mastigophoren und Rhizopoden. **[Doflein's textbook of protozoology. Part II. Special biology of protozoa. Mastigophora and Rhizopoda.]** pp. iv+366. Jena: Gustav Fischer. 6th Edit. DM 20. **3526**

The revision of this second part of Doflein's textbook of protozoology [for part I, see *V.B.* **22, 2695**] has been very thorough and much recent work up to 1950 has been included.

To the veterinary profession the greatest value will be found in the authoritative descriptions of the Trypanosomidae and the Trichomonadae, but non-pathogenic flagellates, free-living and coprozoic species which sometimes give rise to confusion in the diagnostic examination of material in the laboratory are also described. Details of pathology are described only in relation to the biology of the parasites.

The better quality paper in this volume is accompanied by an improvement in the clarity of the illustrations, a feature which is so neces-

sary in a book dealing with morphology.

—L. P. JOYNER.

WEST, L. S. [Professor and Head of Department of Biology, Northern Michigan College of Education.] (1951). **The housefly. Its natural history, medical importance, and control.** pp. xi + 584. New York: Comstock Publishing Company, Inc.; London: Constable & Co. Ltd. 63s. 3527

A clear well-produced textbook on the natural history of the housefly, dealing especially with the various aspects relating to the spread of disease and the maintenance of public health. Much space is devoted to describing simple methods for disposing of garbage and sewage, and to laboratory techniques used in the study of the insects and the evaluation of insecticides. An extensive bibliography is appended.—A.S.

JAHN, W. (1952). Penicillin und andere Antibiotica in der Tiermedizin. [**Penicillin and other antibiotics in veterinary medicine.**] pp. 172. Konstanz: Terra-Verlag; London: Baillière, Tindall & Cox. DM 12.80. 3528

This discussion of antibiotics is arranged in two parts A and B. The general part A comprises 11 sections covering: History; Properties of penicillin; Mode of action; Spectrum of activity; Other antibiotics—in this section 15 antibiotics are listed including actinomycin, aureomycin, chloramphenicol, gramicidin, streptomycin, terramycin and tyrothricin—; Comparison of antibacterial activity of penicillin with other antibiotics and with sulphonamides; Blood picture and penicillin dosage; Details of dosage; Forms of application; Methods of application and Combination with other antibacterial agents.

Part B comprises six sections:—Clinical, covering general therapy, surgery, internal use in domestic animals, silver foxes and birds, gynaecology in animals, and mastitis; Activity of penicillin on milk; Untoward results through the use of antibiotics; Selective action of antibiotics; Antibiotics added to food; and Humucillin derived from penicillin residues and sphagnum. The author presents a wide view of the field to assist in further applications of antibiotics. There is a tabular list of 524 references and an index.—E. MARSH JONES.

LAWRENCE, J. S. & FRANCIS, J. (1953). **The sulphonamides and antibiotics in man and animals.** pp. xii + 482. London: H. K. Lewis & Co. Ltd. 2nd Edit. 42s. 3529

The first edition (of 1945) of this book was a review of the sulphonamides and their use in human medicine, by the senior author. This second edition is virtually a new book and it has a much wider scope dealing, in addition, with antibiotic therapy in both human and veterinary medicine. The junior author has contributed not only to this latter part but also some of the chapters on pharmacology and on the sulphone drugs.

The result is a most valuable textbook in which all aspects of the subject matter are thoroughly discussed and described.

The first ten chapters are devoted to the various sulphonamides, sulphones and antibiotic drugs which are in common use; the next eight chapters are devoted to the important bacterial diseases and their treatment and the next five chapters to regional infections and their treatment. Two additional writers contribute to this part (eye and ear, nose, and throat). Matters of purely veterinary interest are assembled into two chapters, the first dealing with pharmacological and the second with therapeutic matters.

The vast amount of knowledge published about the subject matter of the book has been industriously reviewed, as witness the 40 pages of references. The subject matter has been arranged in the best way for ease of reference and the index appears to be satisfactory.

No important grounds for criticism are apparent to the reviewer, nor any trivial grounds for criticism on points like misprints. The question of the relative potency and value of the different sulphonamides has been fully discussed from the evidence which, on examination, really shows the impossibility of placing the more effective sulphonamides in any particular order of potency. The author (J.F.) might have saved some space by coming to this conclusion earlier.

The scope of the book is unusual and, in fact, unique, extending as it does over both human and veterinary medicine. The result is advantageous for both fields.

In the book the veterinary surgeon will find the best and most up to date information upon sulphonamide and antibiotic treatment of animals and he cannot fail to learn much from the medical and pharmacological chapters. Doctors who are better supplied with textbooks on chemotherapy will find it advantageous to have one book covering both the sulphonamides and the antibiotics. The book can, in fact, be regarded not only as a revised edition of its own first edition but also one of "The Sulphonamides" by Hawkins and Lawrence (1950).

To sum up, this is an excellent textbook which can be recommended with confidence to all interested in antibacterial chemotherapy.

—J. EDWARDS.

COPEMAN, W. S. C. (1953). **Cortisone and ACTH in clinical practice.** pp. xi+255. London: Butterworth & Co. (Publishers) Ltd. 25s. 3530

In this book the author takes stock of the consensus of current opinion concerning the therapeutic activity of cortisone and adrenocorticotrophic hormone (A.C.T.H.), assessment of the place of these hormones in clinical practice being based on personal experience in their use and study of relevant literature. In six chapters he and his colleagues discuss:— (1) rheumatic and collagen diseases, (2) diseases of the eye, (3) endocrine disorders, (4) respiratory and allergic diseases, (5) skin diseases and (6) disorders of the haemopoietic system, with consideration of the limitations of this hormone treatment. There is an index; the text is illustrated with photographs, diagrams, tables and organic formulae, and the printing is excellent.—E. MARSH JONES.

ANON. (1951). Mécanisme physiologique de la sécrétion lactée. **[Physiology of milk secretion.]** pp. 180. Paris: Centre National de la Recherche Scientifique. Fr. 1200. 3531

A report of a colloquium held in Strasburg in Aug. 1950. The 22 papers given by workers of international repute from the U.S.A., the U.K., France, Belgium and Switzerland recorded, with some notable ommisions, the main advances in lactational physiology in recent years. Some of the articles were reviews and others detailed accounts of the authors' own original investigations. They have not been arranged in any special order and reference is made difficult by the absence of an index, though the papers are listed in alphabetical order of the authors' names in the table of contents at the end of the volume. It is a pity that the discussions which followed the papers have been omitted, for these might well have added perspective to the final work. An attractive feature, however, is the abundance of photographs and text figures.

Ten contributions discussed hormonal correlates in mammary growth and milk secretion in rats, g. pigs, rabbits, goats and cows. The lactogenic hormone figures prominently here in its dual role as a gonadotrophin (luteotrophin) stimulating corpus luteum activity and hence mammary growth, and as a direct stimulant of alveolar secretion. Three papers dealing with the mechanism of milk ejection, described the histological appearance of mammary contractile elements and appraised the experimental evidence supporting the posterior pituitary theory of milk ejection. Three other papers are concerned respectively with the significance of cytological changes in the anterior and posterior lobes of the pituitary during lactation, and with the cytochemical reactions of mammary tissue. The contribution of the biochemist to lactation studies is represented by four papers dealing with lactose and milk fat synthesis by the mammary gland, the effect of hormones on milk yield and composition, mammary enzymes and intermediary metabolism, and the application of new isotope techniques in the study of milk secretion. The last two papers discussed the non-hormonal factors in hypogalactia in women, and lactational habits and practices among primitive peoples' reviewed in the light of modern knowledge of lactational physiology.

Despite the shortcomings referred to above the volume constitutes a valuable reference source of recent work and ideas on the functioning of the mammary gland.—B. A. CROSS.

SCHMID, J. (1951). Die Blutgerinnung in Theorie und Praxis. **[Coagulation of blood in theory and practice.]** pp. xv+444. Vienna: Wilhelm Maudrich. DM 50. 3532

During recent years much research work has been carried out on problems concerned with blood coagulation, but the results obtained are widely scattered throughout the literature. For this reason, the author has attempted to present in a single volume an account, not only of the general nature of blood coagulation, but also of the more important clinical aspects of the subject.

Following the usual practice when dealing with enzyme systems, the various substances concerned in blood coagulation are divided into two groups, activators and inhibitors. The former are represented by thrombokinase, prothrombin, thrombin, fibrinogen etc. and the latter by antiprothrombin, antithrombin etc. Methods for the preparation and estimation of the various substances are described and their chemical properties are discussed. Such conditions as haemophilia, thromboses, dicoumarin poisoning, snake venoms etc. are considered, as well as methods for determining the coagulation time of blood, fibrinokinase activity, retractility of blood platelets etc.

In presenting his account of blood coagulation, the author has used the method of historical approach and each section is provided with a comprehensive list of references. The book therefore forms a convenient work of reference which will be found of value not only to the specialist but also to the general practitioner.

—J. A. NICHOLSON.

BRELAND, O. P. (1953). **Manual of comparative anatomy.** pp. xi + 256. New York, Toronto & London: McGraw-Hill Book Co. Inc. 2nd Edit. $4.50 or 36s. 3533

This book is novel in the sense that it is a true dissection guide and contains no illustrations. The discipline is for the student to examine the skeleton, to dissect from the preferred pages and to draw where instructed. Accepted type animals from the phylum Chordata are reviewed and the script is presented in a form which promotes a true appreciation of comparative structure. It might be argued that the average zoological student would not be able to dissect so many species in a single course: this is probably true, nevertheless intelligent reading of the script would enable the dissector to obtain a balanced view of the phylum. It is a book which encourages the student to think and act for himself.—C. W. OTTAWAY.

BEST, C. H. [Professor and Head of the Department of Physiology, University of Toronto.] & TAYLOR, N. B. [Professor of the History of Medicine and Medical Literature, University of Western Ontario.] (1953). **The living body. A text in human physiology.** pp. viii + 792. New York: Henry Holt & Co., Inc.; London: Chapman & Hall, Ltd. 3rd Edit. 37s. 6d. 3534

The appearance of a third edition of this book so soon after the second edition illustrates the popularity which it has achieved since it was first published. This is well deserved for the subject matter is presented in a straightforward manner and a clear and concise account is given of the various physiological processes which go to make up the living body. A short introductory chapter on elementary physical and chemical principles has been added as well as a short chapter dealing with the defensive mechanisms of the body. There has also been a general revision of the text and many new illustrations have been added.

This book is written solely from the point of view of human medicine.—J. A. NICHOLSON.

ANON. (1951). **Genes and mutations. Cold Spring Harbor Symposia on quantitative biology.** Vol. XVI. pp. xvi + 521. Cold Spring Harbor, L.I., New York: The Biological Laboratory. $9. 3535

This volume of symposia comprises nine sections:—Theory of the gene; Cytoplasmic constituents of heredity; Evolution of the gene; two sections on Induction of changes in genes and chromosomes; three on Genetic mechanisms in bacteria and bacterial viruses; and a report of the concluding session; each section contains contributions—35 in all—by various authors. The following seven papers are included:—Chromosomes and genes, R.B. Goldschmidt; On an unstable cell state in yeast, B. Ephrussi and H. Hottinguer; X-ray induced mutations in mice, W. L. Russell; Selective mechanisms in bacteria, K. C. Atwood, *et al.*; A new cytological basis for bacterial genetics, E. D. De Lamater; Transfer of penicillin resistance in pneumococci by the desoxyribonucleate derived from resistant cultures, R. D. Hotchkiss; and Some enzymes of isolated nuclei, A. E. Mirsky. There is an appendix on the television microscope, by L. E. Flory, and an index.

—E. MARSH JONES.

WOLF, G. (1952). **Chemical induction of cancer.** pp. xiii + 250. London: Cassell & Co. Ltd. 17s. 6d. 3536

This book, primarily designed for the medical reader, but of value to others interested in the chemical aspects of the field, presents a survey of the current position of cancer research. The main experimental facts are summarized and discussed. Arranged in eight chapters, each having many references to the literature, two appendixes, a list of general reviews and author and subject indexes, the text is illustrated with five plates, diagrams, tables and organic formulae.—E. MARSH JONES.

MAINLAND, D. [Professor of Medical Statistics, the Department of Preventive Medicine, New York University College of Medicine.] (1952). **Elementary medical statistics. The principles of quantitative medicine.** pp. ix + 327. London & Philadelphia: W. B. Saunders Company Ltd. 6th Edit. 25s. 3537

The older textbooks of what is best called biometrics showed that a thorough mastery of the subject could not be attempted by the busy research worker. Every investigator must, however, present and analyse data and he therefore requires to know something about biometrics. The author provides a very useful guide to the elementary practices that are most useful in medical and veterinary research. He pays particular attention to interpretation, and poses and shows how to answer the questions that arise in the mind of a person studying his experimental results. In medical scientific literature it is often evident that some of these basic questions have not been considered at all and it will be a useful advance in medical and veterinary science if this book causes such questions to be posed more frequently. It can be thoroughly recommended as a sound and eminently intelligible handbook for all those faced with the necessity of collecting and handling data in the veterinary field.

—F. B. LEECH.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

BASSET, J. (1953). Immunologie et prophylaxie de la tuberculose chez l'homme et chez le boeuf. **[Immunology and prevention of TB. in human beings and cattle.]** pp. xv + 175. Paris: Vigot Frères. Fr. 850.

BONADONNA, T. (1953). Problemi biologici e tecnologici della fecondazione artificiale. **[Biology and technology of artificial insemination.]** pp. xvi + 507. Milan: Collana Tecnico-Scientifica "L Spallanzani". No. 7. L. 6000.

EDWARDS, L. B. & PALMER, C. E. (1953). **BCG vaccination. Studies by the WHO Tuberculosis Research Office, Copenhagen.** pp. 307. Geneva: World Health Organization. Monograph Series No. 12. 15s. $3.00. Swiss Fr. 12. [In English.]

FILDES, P. & VAN HEYNINGEN, W. E. [Edited by.] (1953). **The nature of virus multiplication. Second symposium of the Society for General Microbiology, held at Oxford University, April, 1952.** pp. viii + 320. London: Cambridge University Press. 35s.

GREENSTEIN, J. P. & HADDOW, A. [Edited by.] (1953). **Advances in cancer research.** pp. xi + 590. New York & London: Academic Press, Inc. $12.00 or 96s.

HUGHES, H. V. & DRANSFIELD, J. W. [Edited by.] (1953). **McFadyean's Osteology and arthrology of the domesticated animals.** pp. vii + 288. London: Baillière, Tindall & Cox. 4th Edit. 21s.

KRÁL, F. & NOVAK, B. J. (1953). **Veterinary dermatology.** pp. xv + 325. Philadelphia, London & Montreal: J. B. Lippincott Co. 80s.

MACKIE, T. J. & MCCARTNEY, J. E. (1953). **Handbook of practical bacteriology. A guide to bacteriological laboratory work.** pp. viii + 677. Edinburgh & London: E. & S. Livingstone, Ltd. 9th Edit. 25s.

REICHENOW, E. (1953). Doflein. Lehrbuch der Protozoenkunde. Eine Darstellung der Naturgeschichte der Protozoen mit besonderer Berücksichtigung der parasitischen und pathogenen Formen. II. (Zweite Hälfte): Sporozoa und Ciliophora. **[Doflein's textbook of protozoology. II. (2nd half). Sporozoa and Ciliophora.]** pp. iv + 437 + viii. Jena: Gustav Fischer. 6th Edit. DM 23.50.

STEEL, E. W. (1953). **Water supply and sewerage.** pp. xv + 582. New York, Toronto & London: McGraw-Hill Book Co., Inc. 3rd Edit. $8 or 64s.

VANDEPLASSCHE, M. & PAREDIS, F. (1953). **Caesarian section in the bovine.** pp. 29 + XIV. Paris & Brussels: "Erasme"; Antwerp & Amsterdam: "Standaard-Boekhandel". Fr. 75. [In English.]

WAKSMAN, S. A. (1952). **The literature on streptomycin 1944-52.** pp. xii + 553. New Brunswick, N.J.: Rutgers University Press. 2nd Edit. $5.00.

WOLSTENHOLME, G. E. W. & CAMERON, M. P. [Edited by.] (1953). **Ciba Foundation colloquia on endocrinology. Vol. VII. Synthesis and metabolism of adrenocortical steroids.** pp. xviii + 297. London: J. & A. Churchill Ltd. 30s.

ANON. (1953). **A handbook of colorimetric chemical analytical methods for industrial, research and clinical laboratories. Developed for use with the Lovibond Comparator and the B.D.H. Lovibond Nessleriser.** pp. 206 + 14. Salisbury: The Tintometer Ltd. 2nd Edit. 15s.

ANON. (1952). **Scope and interpretation of the commoner biochemical tests.** pp. iii + 120. Johannesburg: South African Institute for Medical Research. 10s. 6d.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey, Surrey.